ACLAND'S MEMOIR
ON THE
CHOLERA AT OXFORD

WC262
1856
A18m

F.XVII c.14

22101679224

MAP OF OXFORD,

TO ILLUSTRATE

DR. ACLAND'S MEMOIR ON CHOLERA IN OXFORD IN 1854,

SHOWING

THE LOCALITIES IN WHICH CHOLERA & CHOLERAIC DIARRHŒA OCCURRED IN 1854, AND CHOLERA IN 1832 & 1849;

TOGETHER WITH

THE PARTS OF THE TOWN DESCRIBED AS UNHEALTHY, BY ORMEROD, GREENHILL & ALLEN, AND A WRITER IN THE OXFORD HERALD;
THE PARTS REMEDIED SINCE THE DATE OF THEIR DESCRIPTIONS;
THE DISTRICTS STILL UNDRAINED;
THE PARTS OF THE RIVER STILL CONTAMINATED BY SEWERS, IN 1855;
AND THE CONTOUR LEVELS.

REFERENCES TO THE AFFECTED YARDS.

ST THOMAS'
1. Hobbs's Yard.
2. Lamb and Flag Yard.
3. Agas's Yard.
4. Wing's Yard.
5. Faulkner's Row.
6. Sweney's Yard.
7. Billings's Row.
8. Ogwood's Row.
9. Vaughan's Yard.
10. Green's Yard.
11. Shoulder of Mutton Yard.
12. Corbett's Yard.
13. Deane's Yard.

ALL SAINTS'
14. Carter's Yard.
15. Amsterdam Court.

ST MARY MAGDALENE.
16. Rounds Yard.
17. Nunney's Buildings.

ST PETER-LE-BAILEY.
18. Alder's Yard.
19. Faulkner's Row.
20. Brookland's Row.
21. Pollard's Yard.
22. Arnold's Passage.
23. Coach & Horses Yard.

ST PETER'S-IN-THE-EAST.
24. Bidler's Yard.

ST PETER'S-IN-THE-EAST (cont'd)
25. Sarney's Yard.
26. Gravell Walk.

ST CLEMENT'S
27. Hitchcock's Row.

ST ALDATE'S
28. Mens' Houses.
29. Rose Court.
30. Green Dragon Yard.
31. Floyd's Row.
32. Nelson's Yard.
33. Treadwell's Gardens.
34. Shepherd's Row.
35. English's Yard.
36. Sparkes's Yard.
37. Wyatt's Yard.
38. Savory's Yard.
39. Carter's Yard.
40. Pipe-maker's Yard.

ST EBBE'S
41. Speedwell Terrace.
42. Union Place.
43. Eagle Buildings.
44. Bond's Row.
45. Hinds's Yard.
46. White's Yard.
47. Godfrey's Row.
48. Lee's Yard.
49. Magey's Yard.

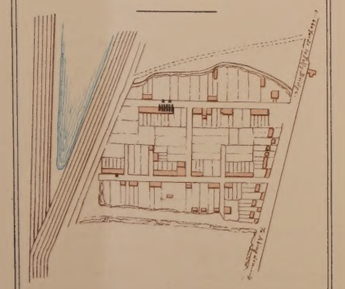
REFERENCES.

	MARKED.
Cases of Choleraic Diarrhœa in 1854	▪
Do. of Cholera ..... in 1854	▮
The above are marked on the House Blocks	
Cases of Cholera ..... in 1849	▮
Do. .. Do. ..... in 1832	▮
The above are marked on the Streets	
Parts described by Ormerod, &c.	●
Such parts wholly remedied	○
Do. .. partially do.	⊘
Districts undrained	
Rivers & Streams	
Do. .. Do. contaminated	
Points of contamination	
Contour Levels, every 5 feet below the summit at Carfax.	⊙

PRINTED IN COLOURS BY MESSRS. PARKER, OXFORD.

NEW HINCKSEY.

Wholly Undrained.



REFERENCES TO THE COLLEGES, &c.

A.S.C. All Souls' College.	Ma.C. Magdalen College.	T.C. Trinity College.
B.C. Balliol College.	M.C. Merton College.	U.C. University College.
B.N.C. Brasen Nose College.	M.H. Magdalen Hall.	W.C. Waltham College.
Ch.Ch. Christ Church.	N.C. New College.	Wor.C. Worcester College.
C.C.C. Corpus Christi College.	O.C. Oriel College.	R.I. Radcliffe Library.
E.C. Exeter College.	P.C. Pembroke College.	S. The Schools.
J.C. Jesus College.	Q.C. Queen's College.	T.B. Taylor Buildings.
L.C. Lincoln College.	S.J.C. St. John's College.	

Christ Church Meadow.

Oxford Bookstall
5/- 22/1/34
Aust

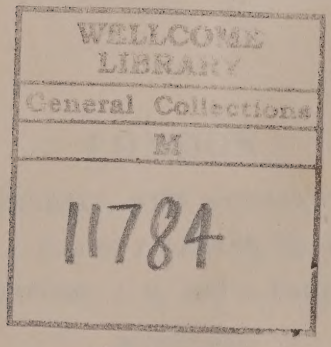
R. Rhs. Bussey Price
with the Author's kind regards.

MEMOIR

ON THE

CHOLERA AT OXFORD,

IN THE YEAR 1854.



MEMOIR

ON THE

CHOLERA AT OXFORD,

IN THE YEAR 1854,

WITH CONSIDERATIONS SUGGESTED BY THE EPIDEMIC.

BY

HENRY WENTWORTH ACLAND,

M.D., F.R.S., F.R.G.S., &c.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS;

PHYSICIAN TO THE RADCLIFFE INFIRMARY; RADCLIFFE LIBRARIAN; AND LEE'S READER IN ANATOMY IN THE UNIVERSITY OF OXFORD.

LONDON:

JOHN CHURCHILL, NEW BURLINGTON STREET,

AND J. H. AND J. PARKER, 377, STRAND.

OXFORD: J. H. AND J. PARKER.

M.DCCC.LVI.

-6538053

The chiefe Vse then in man of that he knowes,
Is his paines taking for the good of all,
Not fleshly weeping for our owne made woes,
Not laughing from a Melancholy gall,
Not hating from a soule that overflowes
With bitternesse, breath'd out from inward thrall;
"But sweetly rather to ease, loose, or binde,
"*As need requires,* this fraile fall'n humane kinde."

Yet some seeke knowledge, meerely to be knowne,
And idle Curiositie that is;
Some but to sell, not freely to bestow;
These gaine, and spend both time, and wealth amisse,
Embasing Arts, by basely deeming so;
Some to build others, which is Charity;
But these to build themselues, who wise men be.

Certaine Learned and Elegant Workes of Lord Brooke, 1633, *p.* 50.

WELLCOME HISTORICAL MEDICAL LIBRARY

Gen. Coll.
M
13029

CONTENTS.

PAGE

DEDICATION 5

INTRODUCTION 9

PART I.

HISTORY OF THE EPIDEMIC.

CHAPTER I.—*Course of the Disease in Oxford.*

Table of Cases of Cholera and Choleraic Diarrhœa 14

Localities of the first thirty Cases 21

Physical Topography of the City 21

Impurities of the Isis and the Cherwell 24

The Intensity of the Disease in successive periods of the Epidemic 24

Table of Cases and Deaths for every week of the Epidemic 26

Table of Cases and Deaths for every week of the Epidemics of 1832, 1849, and 1854 28

Order of Attack in the Parishes 29

Proportion of Cases to Deaths in the several Districts 29

Table, showing the Cases and Deaths per 1000 in 1832, 1849, and 1854 30

Proportion of Deaths to Cases in Private Houses and Public Institutions 31

Table, showing the above in 1832, 1849, and 1854 32

The Cholera, in relation to Age, Sex, and Occupation 33

Progress of Diarrhœa and Choleraic Diarrhœa 35

Comparison of the Epidemics of 1854, 1832, and 1849 36

Table, illustrating the above 37

CHAPTER II.—*On the Cholera in the Neighbourhood of Oxford.*

Cases apparently sporadic 40

Cases apparently traceable to communication with Oxford, *a.* where one case occurred 43

b. where other cases followed 44

CHAPTER III.—*Local causes which may have influenced the Progress of the Disease.*

General condition of the people 46

State of the Dwellings of the Poorest Classes 46

Effect of Elevation 47

Effect of Density of Population 50

Effect of Imperfect Drainage and of Water Supply 50

CHAPTER IV.—*Meteorology of the Epidemic* (by Mr. JOHNSON).

Tables, Barometer 53
Thermometers, Hygromatical Deductions 54
Mean daily range of Thermometer 55
Quantity of Rain 55
Direction, &c. of the Wind 56
Amount of Cloud, Ozonometer 56
Explanation of the Tables 57

The Relation between the Atmosphere and the Disease (The Author) 63
Ozone 65
Thermometer 65
Rain, Wind, Barometer 66

CHAPTER V.—*Treatment of the Disease in Oxford.*

Opinions of the Medical Practitioners concerning the Treatment of Diarrhœa 67
— — — — — and Choleraic Diarrhœa .. 68
Other considerations concerning the Treatment of Diarrhœa and Choleraic Diarrhœa 70

CHAPTER VI.—*The Conclusions.*

Theory of the Cause or Causes of the Disease 73
General Phenomena of the Disease in the Oxford District 75
Hypothesis of the Nature of Cholera 76
Practical Conclusions 77
On the mode of Spreading of the Disease 79
The Danger of close Dwellings 80
Previous preparation for Cholera, economical and necessary 82
Summary 83

PART II.

ARRANGEMENTS MADE IN OXFORD DURING THE EPIDEMIC.

Principles on which the Arrangements were conducted 86
Example of a Public Notice which embodies the chief arrangements 88
Forms of Cheque Books, &c. 93
Distribution of Medical Attendants 95
The Field of Observation 97
The Nurses 98
Distribution of Food 99
Duties of Inspector 102
Business of the Police Office 103

PART III.

THE LESSON OF THE EPIDEMIC.

CHAPTER I.—*Our Present Condition.*

An unreasonable mode of life one cause of disease 105
The end of Hygiéne 107
Chief Evils of a Town Population 108

CHAPTER II.—*On some Habitations in Oxford, and their Ventilation.*

Comparison between the Infirmary and the Gaol 109
Arnott on Ventilation 109
The Manchester and Salford Association's advice concerning houses 111

CHAPTER III.—*The Drainage of Oxford.*

The State of the Thames 114
The Evil of the Foulness of the River 115
On the Disposal of Town Sewage 116
The Value of Town Sewage 117
Mr. Lawes' opinion concerning it 118
Conclusions thereupon 119
The Practical course with respect to Oxford 120
Letter from Professor Voelcker on Sewage 122
Analysis by him of Leicester Bricks 125

CHAPTER IV.—*On certain points affecting Voluntary Institutions for giving Medical Aid.*

Poor Law Medical Relief 127
Subscriptional Hospitals, as Standards of Medical and Surgical Practice 129
— — as Models of Sanitary and Œconomical arrangement 130
— — as Patterns of the mode of caring for the Sick 131
Serious Disease the true ground for admission to a Hospital 137
Admission to Hospitals by small payments 139
On Parochial Nurses 139
On certain points in the Management of Penitentiaries 140

CHAPTER V.—*On certain Relations between Moral and Physical Improvement.*

1st. On general Education, with a view to the domestic comfort of the Masses 142
2nd. On Recreation, (1) Religious 150
— — (2) Intellectual 151
— — (3) Physical 156

CHAPTER VI.—*The Summary.*

The wishes of the Medical Practitioners on the subject of Sanitary Improvement 159
The Improvements which have been accomplished 161

APPENDIX.

A. Dangers attending certain Localities at *Witney* 163
B. On Drainage in China, by the Abbé Huc 163
C. Protest against the Introduction of Gas into the Infirmary without Ventilating Tubes 165
D. Letter from the Author to the Vice-Chancellor on the duty of erecting Wards for Cholera or other Epidemic Disease 166
E. On the tempers which are fostered by Scientific Studies, (by Professor Price) 168
F. Certain Benevolent and Educational Institutions in Oxford 169
G. Reference to certain Works on the subjects of this Memoir 172

PLATES.

1. Map of Oxford, showing the localities in which Cholera and Choleraic Diarrhœa occurred in 1854, and Cholera in 1832 and 1849; together with the parts of the City described as unhealthy, by Ormerod, Greenhill, and Allen, and a writer in the Oxford Herald; the parts remedied since the date of their descriptions; the districts still undrained; the parts of the river still contaminated by Sewers, in 1855; and the contour levels. (*To face Title-page.*)

2. Sketch Map of Oxford, showing the localities and order in which the first thirty cases occurred. (*To face p.* 21.)

3. District round Oxford, showing the places in which Deaths from Cholera occurred in the latter half of 1854. (*To face p.* 46.)

4. House in Gas-street in which eleven cases of Cholera occurred. (*To face p.* 81.)

5. Diagram, showing the daily number of new cases of Cholera, Choleraic Diarrhœa, and Diarrhœa, reported in Oxford during the Epidemic of 1854; together with the daily maximum and minimum of temperature of the Air, the amount of Rain, degree of moisture in the Air, the mean height of the Barometer, the force and direction of the Wind at 10 A.M. and 2 P.M. and the amount of Cloud. The Meteorological data furnished by Manuel Johnson, Esq. the Radcliffe Observer. (*At the end of the Memoir.*)

TO

SIR BENJAMIN COLLINS BRODIE, BART., D.C.L.

&c. &c.

AND

WILLIAM PULTENEY ALISON, M.D., D.C.L.

&c. &c.

THIS brief Memoir on the Cholera, as it occurred in Oxford in the year 1854, is dedicated to you, not as in itself worthy of the honour of your names, but as enabling me to record a part of the debt of gratitude which I owe to you both, for your instruction during my pupillage, and your unvarying friendship from that time until now. I have lived to aid in conferring upon you in our applauding Theatre a Degree, by the acceptance of which you have added value to that honour, and have linked your names for ever with the University of Oxford. I think with satisfaction that shortly the Son of one of you will teach the highest branches of Chemical Science, where the Father of the other first thought out those principles of Mental Philosophy, that will be for ever associated with the name of Alison.

Not however for these reasons only should I have ventured to ask your indulgent patronage of this Essay; but I ask it also because, in the freedom of happy intercourse, you enjoined on me, both by precept and example, to seek daily in our common Profession other fruit besides that which is indeed its first and most precious harvest—the Healing of Disease; to seek out, and to strive to influence for good, those hidden circumstances which, more than we are aware of, affect both the physical and moral happiness of individuals, and masses of society; circumstances which it is so much the desire of the present age to discover, and to guide. I saw in your own lives, how much of self-discipline and culture, what tender but active and wisely ordered charity every occurrence of daily life may be made to bring forth. How little of what you suggested I can hope to effect, is known only to the sadness of my own heart, and the observers of my failures.

To every thoughtful Physician, such a Visitation as a Cholera Epidemic brings a torrent of deep questionings. To be placed face to face with one of the great Scourges of Man; to be forced to confront, in mass and in detail, the moral and physical evils which engender or increase Epidemic diseases in our Towns, is to be led into stern communings concerning the whole of our social and political life. Why do such evils, long known, still exist? Why is so much energy, as certainly exists in favour of all truly benevolent schemes, dormant, or misapplied? Does the moral and religious state of our people keep pace with their greater physical advantages? Are we not in danger of forgetting, in the midst of boasted material and intellectual progress, that it is as certainly true now as ever it was, that the largest part of the misery among men depends at last on moral, not on material, causes? These and many other such questions rise in the minds of Englishmen, when by social or political trial their souls are stirred within them.

Some parts of England, when the Cholera was almost at its height in 1854, were nearly as unprepared as they had been in 1849. Is it certain they will be much better when it comes again? Can it possibly be that true social progress and the wisdom of self-government are hardly compatible? or that free institutions are less safe for a people as their education advances? If it were so, must it not be that the education stumbles as it goes forward? Surely, even if it be so, it need not so be.

In Oxford — in this place of Education — many have striven, as others have striven, to add their share to the well-being of the people. It is no time for boasting, truly! But in the determination to develope a greater knowledge of the material world, among those committed to their care, they have shown that they know a way, which though long is sure. We shall certainly every year send out more of the gentry and the clergy, informed on all subjects connected with the laws of health, and so with the well-being of the people. Think what one nobleman, one country gentleman, one clergyman, wise in these respects and energetic, can effect! Think what many of the gentry and clergy have done! What one man, Lord Shaftesbury, has achieved! And then what may we not hope, when time has been given for our youths to obtain University honours for their knowledge of Chemistry, Physiology, Hygiène; and so feel the cheering glow of physical truths, as applied to the bettering of man's estate. When the Professors who teach these subjects have made their purpose felt, through the hearts and the heads of the upper classes, how much good, and content, and gratitude, may not spring up in the hearts of even the most hopeless members of the body politic.

But I return. You will excuse me for this digression, when you think how we are necessarily led to consider the very groundwork of our œconomical con-

dition, when we talk of "*preparing* for the Cholera." We all know now that the true preparation lies in the healthy life and well-ordered habits of the Community. We all know that the true management at the time requires the absolute authority of some discreet but competent power, unhampered by a routine which is proper for less urgent times. But this kind of preparation is dependent on more moral and social causes, than could be discussed within the compass of a volume; and this kind of management though the only effectual method, is too often distasteful to the people.

The result of all these considerations appears to be this; to be thankful for the great gain that has been made, and is making, in Sanitary matters; to strive more earnestly after moral, intellectual, and religious, truly religious, progress; if there be any whom we can each of us aid, to aid them as circumstances will allow us; and so, hoping to the end, to leave the rest in the hands of the Disposer and Preserver of all things.

That the general aim of these remarks will meet with your approval I do not doubt. If I could flatter myself that the pages which have called them forth could find equal indulgence at your hands, I should cherish the hope that they might prove of some advantage to the City and Counties on behalf of which they have been mainly undertaken.

I am, with the truest respect,

Your affectionate friend and servant,

HENRY W. ACLAND.

MAY 1st, 1856.

INTRODUCTION.

This brief Memoir on the Cholera, as it occurred in Oxford in 1854, is made public by me with a full sense of its incompleteness, and half a wish that it had not been undertaken. But I believe it to be of consequence that it should be published without further delay, if at all; and the same causes which have in part made it difficult to me to prepare it, viz. other duties, would make it nearly as difficult for me now materially to amend it. The labour of such an undertaking is far more than will be apparent to any but those accustomed to such works. Nothing but a sense of duty, and a debt of affection and gratitude to this University, City, and District, would have induced me to undergo it. It is to those fully capable of judging of such a task, that I should most willingly submit for criticism a work, undertaken as a labour of love, without any means of obtaining information or aid except such as the hearty kindness of many friends of every class of society allowed; a kindness indeed so hearty that no words of mine could express the sense which I entertain of it.

For the purpose alone of obtaining a tolerably correct list of the Cholera Cases, it has been necessary to examine the whole City at least three times; and trifling errors, which would not indeed have materially altered the general result, have required the recasting and recalculating all the Tables thrice also. If therefore any errors exist, as probably they do, they at least are not due to a lack of perseverance. Much of this labour was undertaken by my excellent Physiological Assistant in the Christ Church Museum, Mr. Dowson.

With respect to the short Essays in the Third Part of the Memoir, they might perhaps have been wholly spared in their present form; and if so, I should have been saved in that Part much time and trouble. But I hope the work may fall into the hands of persons who have not thought on the subjects of which they treat, or who may not have connected them with the idea of Epidemic Disease. If so, they will have their use in suggesting subjects to their serious attention; and for this purpose they are printed. Various facts and opinions in the Paper will be so familiar to persons conversant with the several matters touched on in it, that they will be tempted to ask, why time was spent upon them. But I bear in

mind a stern rebuke of Chalmers, at the close of one of his Essays, addressed to those who, dreaming about great projects, refuse to apply themselves to the humble tasks lying immediately at their hands. And I am much of the mind of the injunction to children, that they should learn to do their duty in the station of life in which they are placed. So that if in any way this place and neighbourhood be benefited by setting the more active minds here engaged to aid those who have already toiled in this field—and there are many—my object will be attained.

To this may also be added, that some circumstances in the two first Parts of the Memoir have force, chiefly because they occurred in a small City—one possessing an Active and Pious Clergy, and a number of Benevolent and Beneficent persons proportionately as great as any in the kingdom. What then may still be the state of some of the less fortunate and denser Towns?

The matters placed in the Appendix are referred thither to keep the text free from interruptions and digressions.

It remains for me only to add, as heartily and respectfully as I am able, my thanks to those who have in any way aided me by information or advice. I truly wish that the result were more worthy of their names, and their kindness. I fear the Reader may wonder what can have become of communications which were furnished by such men, in so ample numbers.

To the Registrar General Major Graham, and Dr. Farr of his office, I owe the means of obtaining copies of the Registers of Deaths of all places in the surrounding Registration Districts in which Cholera occurred: personally also I must acknowledge the kindness with which their assistance was given. I may add, that wherever Government Officers give such friendly aid to individuals, as I have had from these gentlemen, from Lord Courtenay, Secretary to the Poor Law Board, from the late President of the Board of Health, and Mr. Scott of the same Office, they offer the best incentive to private persons to undertake useful and unpaid public work: and I believe the value of local undertakings of this nature, as furnishing data for more extended inquiries, will in return be acknowledged by those great Offices of State in the Metropolis, with the labours of which, no lesser works can ever compare or compete.

The Members of the Oxford Board of Health who transacted its business in 1854, viz. Mr. Carr the Chairman, Mr. Alderman Butler the Secretary, Mr. Neate, of Oriel College, Messrs. Cartwright and Boddington, will be pleased to allow me to record my hearty thanks for their confidence and kindness, while I acted under

them. Few Members of the University have more reason to acknowledge the value of the hearty cooperation of the Authorities of the City than I have.

To the Medical Practitioners, who were engaged with me in aiding the Guardians in their responsible duties, the Board of Health would, I feel sure, wish to express a grateful sense of their unremitting labours. It would not become me to do this; but I may say, on my own behalf, that I never can forget that the Gentlemen, whose names are here recorded, by their undeviating personal kindness and forbearance, as well as by their energy, made it possible to me to assist in carrying out the wishes of the Board, in aid of the Union Surgeon, Mr. G. R. Wyatt, and have placed within my reach many of the data on which this Memoir is founded. Our common service was the more difficult, because in the previous Epidemics the authority and counsel of the chief residents of the University, and the principal persons in the City, were brought to bear in whatever was done or attempted; and an unfortunate disagreement between the Guardians and the Board of Health in 1849, had left a doubt as to the spirit in which the conduct of another Epidemic would be attempted. To the following Oxford Practitioners therefore are my sincere thanks returned.

R. Jackson, Esq. M. D., (Oxon.,) Physician to the Radcliffe Infirmary.
J. T. Hester, Esq., Surgeon to the Radcliffe Infirmary.
E. L. Hussey, Esq., Surgeon to the Radcliffe Infirmary.
R. J. Hansard, Esq., Surgeon to the Radcliffe Infirmary.
F. Symonds, Esq., Surgeon to the Radcliffe Infirmary.

J. Briscoe, Esq.
W. Doak, Esq.
R. F. Freeborn, Esq.
R. Giles, Esq. M. D. (Edinburgh.)
J. Godfrey, Esq.
J. Hester, jun., Esq.
G. C. H. Hitchings, Esq.
J. M. Hyde, Esq.
W. Leapingwell, Esq. M. D. (Edinburgh.)
J. Martin, Esq.
E. R. Owen, Esq.
W. Rusher, Esq.
J. Taunton, Esq.
T. Tyerman, Esq.
C. J. Vincent, Esq.
J. F. Wood, Esq., Surgeon to the County Gaol.

To the following Gentlemen I am much indebted for various inquiries and communications concerning their respective neighbourhoods. Without their help, the information concerning the District round Oxford would have been unattainable.

A. Batt, Esq., Witney.
E. Batt, Esq., Witney.
W. R. H. Barker, Esq., Wantage.
W. C. Byass, Esq., Dorchester.
T. Chesterman, Esq., Banbury.
C. Cogan, Esq., Wheatley.
J. Denne, Esq., Winslow.
W. P. Douglas, Esq., Banbury.
J. W. Kimpton, Esq., Stadhampton.
W. Lightfoot, Esq., Harwell.
J. F. Martin, Esq., Abingdon.
H. T. T. Palmer, Esq., Woodstock.
H. W. Reynolds, Esq., Thame.
W. G. Walker, Esq., Brill.

The valuable pages of my esteemed colleague Mr. JOHNSON, and the letter from Professor VOELCKER, speak for themselves. Mr. LAWES, and my learned friend Professor DONKIN, have also kindly given me their advice.

Four of the Maps which illustrate this Memoir were drawn by a Lady, who assisted me with the greatest energy and skill in the verification of every house in which Cholera occurred. The basis of the Map of Oxford is Hoggar's Survey.

Much assistance has been derived from Dr. GREENHILL's excellent Paper on the Cholera in Oxford in 1849, printed at the end of the Ashmolean Society's Reports on the Mortality and Public Health of Oxford in 1849 and 1850. The materials concerning the year 1832 and 1849, are derived from this source; and the Tables relating to those years are reprinted from his Work, to facilitate the comparison with the year 1854.

In a scientific sense, parts of the only attainable evidence of an inquiry like this are necessarily inconclusive: much of the useful business of life would come to an end, and the Physician would throw away many lives, if he could not, or would not, manfully act upon the greater probability. I am deeply sensible of the scientific and literary shortcomings of these pages; but I believe that even such a Memoir on every affected district, would prove of real service to the Country. Such Essays would accumulate a great amount of information, derived from negative considerations as well as positive facts, which would bring about much practical good to the people.

PART I.

HISTORY OF THE EPIDEMIC.

CHAPTER I.

Course of the Disease in Oxford.

§. 1. OXFORD has been thrice visited by a Cholera Epidemic: once in 1832, once in 1849, once in 1854. The history of the two first visitations has been already recorded*. It remains to pourtray the more important features of the Epidemic as it appeared in 1854.

The following Memoir will be divided into three Parts.

1st. A record of the mode of invasion, and of the course of the Epidemic, with an examination of those neighbouring districts in which death from Cholera took place at the same time of the year as at Oxford; the treatment adopted in Oxford; and the circumstances which seemed to influence the progress of the malady.

2nd. An account of the Sanitary Arrangements adopted in Oxford.

3rd. Suggestions for the future; or the Lesson of the Epidemic.

It may not be amiss here to premise in what manner the information which follows was obtained. The Sanitary condition of the City was under the care of the Board of Guardians. They appointed a Committee to act as a Board of Health. On the 6th of September the Board added the Writer to their number as Consulting Physician. On the 10th the necessary arrangements came into operation. At this time the Epidemic was almost at its height. No complete record had been attempted before this time; but I have collected, I believe, all the Cases which had previously occurred. On and after the 10th all cases of Diarrhœa and Choleraic Diarrhœa and Cholera were reported to the Board, with but few exceptions, by all the Medical men engaged by it. A weekly return was also furnished at a later period by most of the Medical Practitioners. Their numerical daily Returns have been collated with these more detailed weekly Returns: where there is discrepancy, the excess is usually on the side of the daily Return furnished at the time: on the other hand, some cases have been detected that were not returned at the time, and these cases are entered at their proper date. The names and addresses of several cases of Choleraic Diarrhœa cannot be recovered. The deaths recorded by the Medical Practitioners have been compared with the Registers in the several Districts. With all the care then that was possible, the following Table has been constructed. It records the date, age, sex, residence, result and date of result, of each case of Cholera and Choleraic Diarrhœa, and the occupation of the greater number is appended.

* Memorials of the Malignant Cholera in Oxford, 1832, by the Rev. V. Thomas.—Report on the Mortality and Public Health of Oxford in 1849, '50, by Dr. Greenhill and Mr. Allen. See also Appendix.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
1	Aug. 6	F	32	Butcher's wife	Walton-road, St. Paul's	Death in 10 hours	C	
2	12	F	45	Charwoman	Gas-street, St. Ebbe's	Recovery *	C	
3	12	M	23	Prisoner	County gaol	Recovery		CD
4	15	F	8	Carter's daughter	Gas-street	Death, Aug. 17	C	
5	19	M	50	Prisoner	County gaol	Recovery, Sep. 24		CD
6	29	F	34	Tailor	Gas-street	Recovery, Sep. 5	C	
7	30	M	9	Carter's son	Gas-street	Recovery, Sep. 4	C	
8	30	M	20	Prisoner	County gaol	Recovery, Sep. 15		CD
9	30	F	19	Butcher's daughter	Gas-street	Recovery, Sep. 6	C	
10	30	F	4	Soldier's daughter	Gas-street	Recovery, Sep. 6*	C	
11	30	M	40	Labourer	Gas-street	Recovery	C	
12	30	M	30	Railway Porter	New Osney	Recovery		CD
13	31	M	3	Shoemaker's son	Blackfriars'-road, St. Ebbe's	Death, Aug. 31	C	
14	Sep. 1	F	15 mos.	Labourer's daugh.	Gas-street	Recovery, Sep. 8*	C	
15	1	F	40	Charwoman	Mazey's-yard, St. Ebbe's	Recovery, Sep. 14*		CD
16	1	M	72	Labourer	Sparks's Yard, St. Aldate's	Death, Sep. 3	C	
17	2	M	49	Pipemaker *a*	Waterloo Build., Blackfr.-rd.	Death, Sep. 4	C	
18	2	M	35	Groom	George's-yd., St. Clement's	Recovery, Sep. 9	C	
19	2	M	32	Shoemaker	Church-street, St. Ebbe's	Death, Sep. 5	C	
20	2	M	14 mos.	†	On the River	Death, Sep. 2	C	
21	3	F	16 mos.	Shoemaker's dau.	Blackfriars'-road	Death, Sep. 3	C	
22	3	F	72	Servant's wife	Gas-street	Death, Sep. 4	C	
23	4	F	63	None *b*	High-st., St. Peter's in East	Death, Sep. 4		CD
24	4	M	43	Fishmonger *c*	Market-street, St. Michael's	Death, Sep. 6	C	
25	4	M	48	Milkman *d*	Marston	Recovery, Sep. 10	C	
26	4	M	42	Architect	St. Aldate-street	Death, Sep. 4	C	
27	4	M	15 mos.	Carpenter's son	Godfrey's Row, St. Ebbe's	Death, Sep. 6*	C	
28	4	F	19	Tailor	Gas-street	Recovery, Sep. 6*	C	
29	5	M	69	Tailor	Church-street, St. Ebbe's	Death, Sep. 7		CD
30	5	M	5 mos.	Laundress's son *e*	Near the Church, St. Giles's	Death, Sep. 8		CD
31	5	F	45	Washerwoman	Friar's Entry, S. Mary Magd.	Recovery, Sep. 7		CD
32	5	F	38	Prisoner	County gaol	Death, Sep. 19		CD
33	5	F	40	Labourer's wife	Jericho Gardens, St. Paul's	Death, Sep. 13	C	
34	6	M	60	Boatman	Hythe Bridge, St. Thomas	Death, Sep. 7*	C	
35	6	F	20	Labourer's wife	Mazey's-yard	Recovery, Sep. 9	C	
36	6	F	21	Washerwoman	Blackfriars'-road	Recovery, Oct. 4*	C	
37	6	F	4	Labourer's daugh.	Park-End-street, St. Thomas	Death, Sep. 6	C	
38	6	M	34	Labourer	Park-End-street	Death, Sep. 6	C	
39	7	F	55	Policeman's wife	Gas-street	Death, Sep. 8	C	
40	7	M	33	Coal merchant *f*	Hythe Bridge	Recovery, Sep. 21	C	
41	7	M	56	Surgeon *g*	St. Clement's Alms-house	Death, Sep. 9	C	
42	7	F	36		St. Giles's Road West	Recovery, Sep. 18		CD
43	7	M	50	Mason	Friar's Wharf, St. Ebbe's	Recovery, Sep. 14		CD
44	7	F	28	Waiter	Cornmarket-street	Recovery, Sep. 17	C	
45	8	F	3 mos.		Bath-street, St. Clement's	Death, Sep. 13		CD
46	8	F	36	Labourer's wife	Park-End-street	Death, Sep. 8	C	

* All Cases marked * are those of persons removed from their residence to the Hospital or the Field of Observation.

† In some Cases it has been impossible, in some undesirable, to state the Occupation or Profession.

a "Died of Consecutive Fever."

b In great debility for years—very poor—in want of common necessaries—ill for about twelve hours.

c Reduced by previous illness and distress. House offensive from bad drainage.

d Attacked in New College-street.

e Had had neglected Diarrhœa for four days.

f "Had retention of urine for five days—followed by Gastritis."

g Had severe premonitory Diarrhœa for several days.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
47	Sep. 8	M	2	Labourer's son	Park-End-street	Recovery, Sep. 15*	C	
48	8	F	21	Labourer's wife *h*	Castle-st., St. Ebbe's	Death, Oct. 1	C	
49	8	M	24	Tailor *i*	Seven Stars Inn, S. Aldate's	Death, Sep. 8	C	
50	8	M	48	Hawker	Commercial-road, St. Ebbe's	Death, Sep. 8	C	
51	8	M	5	Carter's son	Gas-street	Death, Sep. 10*	C	
52	8	M	34	Labourer	Jericho Gardens	Recovery, Sep. 14	C	
53	8	M	8	Labourer's son	Sparks's Yard	Recovery, Oct. 4*	C	
54	8	M	5	Labourer's son	Godfrey's Row	Recovery, Sep. 12	C	
55	8	F	35	Tailor's wife	White's Yard, Littlegate	Recovery, Sep. 15		CD
56	8	F	30	Mason's wife *k*	Osney Lane, St. Thomas	Death, Sep. 25	C	
57	9	M	30	Labourer	New Osney	Recovery, Sep. 17	C	
58	9	M	10	Plate-layer's son	New Osney	Death, Sep. 10	C	
59	9	M	38	Accountant	Oriel-st., St. M. the Virgin	Recovery, Oct. 29	C	
60	9	F	18	Labourer's daugh.	Blackfriars'-road	Recovery, Sep. 16	C	
61	9	M	40	Shopkeeper	St. Ebbe's-street	Recovery, Sep. 14	C	
62	9	F	50	Washerwoman	Portland-place, St. Paul's	Recovery, Oct 20	C	
63	9	M	4	Labourer's son	New Hincksey	Death, Sep. 18*	C	
64	9	F	21	Needlewoman	Iffley-road, St. Clement's	Recovery, Sep. 28	C	
65	9	F	54	Prisoner	County Gaol	Recovery, Sep. 20		CD
66	9	M	5 mos.		St. Giles's-street	Death, Oct. 3		CD
67	9	M	40	Prisoner	County Gaol	Recovery, Sep. 24		CD
68	10	F	70	Tradesman's wife *m*	New Osney	Death, Sep. 11	C	
69	10	M	60	Tradesman	New Osney	Death, Sep. 11	C	
70	10	M	9	Labourer's son	New Osney	Recovery, Sep. 23	C	
71	10	M	28	Brewer	Cherwell-st., St. Clement's	Recovery, Sep. 20	C	
72	10	M	9	Shoemaker's son	Bridge-st., St. Ebbe's	Recovery, Sep. 15*	C	
73	10	F	2	Labourer's daugh.	Fisher-row, St. Thomas	Death, Sep. 12	C	
74	10	F	40		County Gaol	Recovery, Sep. 20		CD
75	10	M	50		County Gaol	Recovery, Sep. 21		CD
76	10	F	40	Labourer's wife	New Hincksey	Recovery, Sep. 16		CD
77	10	M	25	Tailor	Floyd's-row, St. Aldate's	Recovery, Sep. 18*		CD
78	11	F	35	Shopkeep. wife *n*	High-street, All Saints	Death, Sep. 13	C	
79	11	F	3	Labourer's daugh.	New Osney	Recovery, Sep. 25	C	
80	11	M	11	Labourer's son	New Hincksey	Death, Sep. 20*	C	
81	11	F	35	*o*	St. John-st., St. M. Magd.	Death, Sep. 23	C	
82	11	M	7	*p*	High-st., St. Clement's	Recovery, Sep. 20	C	
83	11	M	52	Publican	Cornmarket-st., St. Michael's	Death, Sep. 13	C	
84	11	F	30	Prostitute	Should. of Mutt.-yd., S. Tho.	Recovery, Oct. 7	C	
85	11	M	52	Printer	Walton-road	Recovery, Sep. 15		CD
86	11	M	28	Prisoner	County Gaol	Recovery, Sep. 28		CD
87	11	M	42	Labourer	New Hincksey	Recovery, Sep. 26		CD
88	12	M	45	Soldier *q*	High-st., St. Pet. in the East	Death, Sep. 13	C	
89	12	F	39	Tax-collect. wife	Union-place, St. Ebbe's	Death, Sep. 12	C	
90	12	F	49	Grocer's wife	Pollard's-yard, Queen-st.	Death, Sep. 15	C	
91	12	F	37	Laundress *s*	George's-yd., St. Clement's	Death, Sep. 13	C	

h Delivered of a still born child five days after she was attacked by Cholera.

i "Understanding" (as he said) "that just now we should look after the bowels," he took on the evening of the 7th two "antibilious pills." At 10 A. M. on the 8th he was in complete Collapse, and died in a few hours.

k Recovered from Collapse, but died a week afterwards "from Gastritis."

m Had come to New Osney, with her husband, on a visit, the day before they were attacked. No premonitory symptoms.

n Treated with castor oil on a modification of Johnson's plan.

o Profuse and neglected Diarrhœa for 18 hours—Collapse—rice-water evacuations.—Consecutive Fever—All but convalescent—took an over-dose of castor oil—The symptoms returned—Collapse—Death 12 days after the commencement.

p Treated with castor oil.

q Had Diarrhœa on the 10th—recovered on the 11th.—On the 12th dined on pig's liver and a pint of rum—died delirious on the 13th.

s Ill for about three weeks—much better till premature labour came on—then Collapse and death in a few hours.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
92	Sep. 12	M	77	Tailor	Dragon-yard, St. Aldate's	Death, Sep. 16		CD
93	12	F	40	Servant	Broad-street	Recovery, Sep. 24		CD
94	13	F	72	Lodg.-house keep.	Castle-street, St. Ebbe's	Death, Sep. 15	C	
95	13	M	25	Labourer	Gas-street	Recovery, Sep. 18	C	
96	13	F	20	Wardour's daugh.	Blackfriars'-road	Recovery, Sep. 27	C	
97	13	F	7	Charwom. dau. *r*	Pollard's-yard	Death, Sep. 13	C	
98	13	M	39	Saddler	Cornmarket-st., St. Michael's	Recovery, Sep. 15		CD
99	14	M	2		Workhouse	Death, Sep. 16	C	
100	14	F	40	Labourer's wife	Orpwood's-row, St. Thomas	Death, Sep. 15*	C	
101	14	M	45	Prisoner *t*	County Gaol	Death, Sep. 15	C	
102	14	M	16	Drummer	Sparks's-yard	Recovery, Sep. 22	C	
103	14	M	33	Shopkeeper	Sparks's-yard	Recovery, Sep. 30	C	
104	14	F	10	Grocer's daugh. *u*	Pollard's-yard	Death, Sep. 14	C	
105	14	F	53	Washerwoman	Cardigan-street, St. Paul's	Recovery, Sep. 19		CD
106	14	M	15	Labourer's son	Sparks's-yard	Recovery		CD
107	15	M	65	Prisoner	County Gaol	Death, Sep. 15	C	
108	15	F	9	Servant's daugh.	Pollard's-yard	Death, Sep. 15*	C	
109	15	F	34	Whitesm. wife *x*	Tarry's-yd., St. Pet. in East	Death, Sep. 15	C	
110	15	F	41	Glazier's wife *y*	High-st., St. Clement's	Recovery, Sep. 25	C	
111	15	F	50	Washerwoman	Nelson's-yd., St. Aldate's	Recov. in 5 weeks		CD
112	16	F	30	Labourer's wife	Sparks's-yard	Recovery, Sep. 24	C	
113	16	F	3	Ostler's daughter	Carter's-yd., All Saints	Death, Sep. 16	C	
114	16	F	38	Mason's wife *z*	Friars' Wharf, St. Ebbe's	Death, Sep. 23	C	
115	16	M	15	Brewer's son	Cherwell-street	Death, Sep. 16	C	
116	16	M	29	Labourer *a*	Wyatt's-yd., St. Aldate's	Death, Sep. 16	C	
117	16	M	50	Debtor	County Gaol	Recovery, Sep. 24		CD
118	16	M	18	Prisoner	County Gaol	Recovery, Sep. 19		CD
119	16	M	52	Labourer	Bridewell-yd., Speedwell-st.	Recovery, Sep. 20		CD
120	16	M	32	In the Brewery	Cherwell-street	Recovery, Sep. 25		CD
121	16	F	30	Labourer's wife	Cherwell-street	Recovery, Sep. 20		CD
122	17	M	30	Prisoner	County Gaol	Recovery	C	
123	17	F	55	Charwoman	Blackfriars'-road	Death, Sep. 17	C	
124	17	M	48	Labourer *b*	Church-st., St. Ebbe's	Death, Sep. 22*	C	
125	17	F	52	Landlady	Shoulder of Mutton-yard	Recovery, Sep. 23	C	
126	17	F	42	Labourer's wife *c*	Wyatt's-yard	Death, Sep. 17	C	
127	17	M	9	Labourer's son *d*	New Hincksey	Death, Sep. 19	C	
128	17	F	58	Labourer's wife	Carter's-yd., St. Aldate's	Recovery, Oct. 14	C	
129	17	M	5	Lacemaker's son	Hollybush-row, S. Thomas	Recovery, Sep. 23*	C	
130	17	M	18	Servant	Littlegate	Recovery, Sep. 21		CD
131	17	M	36	Railway Inspector	New Osney	Recovery, Sep. 30		CD
132	18	F	52	Labourer's wife *e*	New Hincksey	Death, Sep. 19	C	
133	18	F	8	Labourer's daugh.	New Hincksey	Recovery, Sep. 22	C	
134	18	F	38	Labourer's wife	Osney Lane	Death, Sep. 18	C	
135	18	M	28	Bricklayer	Pollard's-yard	Recovery, Sep. 28		CD
136	18	M	42	Labourer	Park-End-street	Recovery, Sep. 25		CD
137	18	F	27	Washerwoman	Buckland's-row, Queen-st.	Recovery		CD
138	18	M	45	Publican	Cornmarket-st., St. Martin's	Recovery, Sep. 28		CD

r No premonitory symptoms. Death in nine hours.

t Premonitory Diarrhœa—death ten hours after the symptoms of Cholera appeared.

u No premonitory symptoms—death in twelve and half hours.

x House filthy and close.

y Treated with castor oil on a modification of Johnson's plan.

z Recovered from Collapse—sank in Consecutive Fever—is believed to have made no water during the seven days of illness.

a No premonitory symptoms—extreme collapse—death in fifteen hours.

b "Half-starved."

c Previous Diarrhœa for "a day or two." Death in less than 12 hours from the commencement of Collapse.

d Ill-fed and clothed—House dirty.

e "The family without necessaries."

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
139	Sep.18	M	40	Bookseller	St. Aldate-st., St. Martin's	Recovery, Sep. 25		CD
140	18	M	62	Prisoner	County Gaol	Recovery, Sep. 30		CD
141	19	F	24	Sweep's wife	Buckland's-yd., S. P. le Bail.	Recov. in a fortn.	C	
142	19	M	47	Paviour *f*	Floyd's-row, St. Aldate's	Death, Sep. 19	C	
143	19	F	35	Gardener's wife	Hunt's Build., Blackfr.-rd.	Recovery, Sep. 24	C	
144	19	M	3½	Labourer's son	Caroline-st., St. Clem.	Recovery, Sep. 26		CD
145	19	F	52	Needlewoman	King-st., St. Pet. in the East	Recovery, Sep. 23		CD
146	20	M	68	Shoemaker	Carter's-yard, All Saints	Recovery, Oct. 7	C	
147	20	F	33	Charwoman *g*	Bath-st., St. Clement's	Death, Sep. 26	C	
148	20	F	34	Labourer's wife *h*	New Hincksey	Death, Sep. 29*	C	
149	20	F	50	Horsedealer's wife	Brewer's-street., St. Aldate's	Death, Sep. 23	C	
150	20	M	76	Labourer	Workhouse	Death, Sep. 22*	C	
151	20	F	50	Prisoner	County Gaol	Recovery, Sep. 29		CD
152	20	M	30	Porter	Church-st., St. Ebbe's	Recovery, Sep. 22		CD
153	20	F	1	Servant's daugh.	Workhouse	Death, Oct. 2		CD
154	20	F	9	Labourer's daugh.	Bath-street	Recovery, Sep. 27*		CD
155	20	M	6	Labourer's son	Bath-street	Recovery, Sep. 23*		CD
156	20	M	11	Labourer's son	English's-yard, St. Aldate's	Recovery, Sep. 28		CD
157	20	M	16	Labourer's son	English's-yard	Recovery		CD
158	20	F	45	Widow	English's-yard	Recovery		CD
159	20	F	40	Stableman's wife	English's-yard	Recovery		CD
160	21	F	12	Labourer's daugh.	Corbett's-yard, St. Thos.	Recovery, Sep. 28	C	
161	21	M	3	Labourer's son	Bath-street	Death, Sep. 23*	C	
162	21	F	1	Ostler's daugh.	Carter's-yard, All Saints	Death, Sep. 21*	C	
163	21	F	3½	Labourer's daugh. *i*	Wyatt's-yard	Death, Sep. 22	C	
164	21	M	11	Labourer's son	New Hincksey	Recovery, Sep. 24		CD
165	21	M	30	Prisoner	County Gaol	Recovery, Oct. 2		CD
166	21	F	23	Prostitute	Shoulder of Mutton-yard	Recovery, Sep. 29		CD
167	22	F	50	Paviour's wife	Thames'-st., New Hincksey	Death, Sep. 23	C	
168	22	F	5 mos.	Labourer's daugh.	Wyatt's-yard	Recovery, Sep. 26	C	
169	22	M	5	Hop-picker	Stean's-yd., St. Thomas	Death, Sep. 23	C	
170	22	F	24	Carpenter's wife	Thames'-street	Death, Sep. 23	C	
171	22	F	5	Labourer's daugh.	Wyatt's-yard	Death, Sep. 25*	C	
172	22	F	9	Labourer's daugh.	Godfrey's-yd., St. Ebbe's	Death, Sep. 24*	C	
173	22	F	5	Printer's daugh.	Turle-street, All Saints	Death, Sep. 23	C	
174	22	F	25	Carpenter's wife *k*	New-street, St. Ebbe's	Death, Sep. 23	C	
175	22	M	28	Prisoner	County Gaol	Recovery, Oct. 1		CD
176	22	M	24	Prisoner	County Gaol	Recovery, Oct. 1		CD
177	22	F	40	Prisoner	County Gaol	Recovery, Sep. 28		CD
178	22	F	34	Prisoner	County Gaol	Recovery, Sep. 29		CD
179	22	F	50	Prisoner *l*	County Gaol	Recovery, Sep. 28		CD
180	23	M	2	Labourer's son	Workhouse	Death, Sep. 25	C	
181	23	M	17 mos.		Billing's-yard, St. Thomas	Death, Sep. 24	C	
182	23	F	50	Plasterer's wife	Blackfriars'-road	Recovery, Oct. 7	C	
183	23	F	10	Stable-keep. dau.	Friars' Wharf	Recovery, Oct. 7	C	
184	23	M	28	Prisoner	County Gaol	Recovery, Sep. 30		CD
185	23	F	55	Builder's wife	Cowley-road, St. Clement's	Recovery, Oct. 7		CD
186	23	M	2	Carpenter's son *m*	New-street, St. Ebbe's	Death, Sep. 23		CD
187	24	M	13	Prisoner	County Gaol	Death, Sep. 25	C	

f Diarrhœa for one day. Death in thirteen hours after cramps and Collapse came on.

g On the 19th she was convalescent from Choleraic Diarrhœa, and was desired to keep at home. She went out, and on the 20th had Collapse, rice-water evacuations, suppression of urine. Death from Consecutive Fever on the 26th. She was under the influence of Mercury when seized with Cholera.

h "Without food for two days."

i Diarrhœa came on at midnight. Symptoms of Cholera at 5 A. M. Death at 10 P. M.

k A very severe case. She had nursed a fatal Cholera case.

l Had neglected Diarrhœa for 36 hours.

m Slight premonitory Diarrhœa. Collapse for eight and a half hours.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
188	Sep.24	F	11	Servant	Paradise-square, St. Ebbe's	Recovery *	C	
189	24	F	45	Laundress	High-st., St. Thomas's	Death, Sep. 24	C	
190	24	F	31	Servant	Queen-st., St. P. le Bailey	Death, Oct. 3		CD
191	24	M	40	Brewer	Hythe-bridge	Recovery, Oct. 5		CD
192	24	M	36	Labourer	George-st., St. Clem.	Recovery, Oct. 4		CD
193	25	M	56	Labourer	Green's-yd., St. Thomas's	Recovery, Oct. 9	C	
194	25	M	44	Chair-maker	Caroline-street	Recovery, Oct. 18	C	
195	25	M	30	Porter	Hollybush-row	Recovery, Oct. 3		CD
196	25	F	45	Stable-keep. wife	Friars' Wharf	Recovery, Sep. 30		CD
197	26	M	66	Schoolmaster *n*	Speedwell-st., St. Ebbe's	Death, Sep. 27	C	
198	26	F	24	Labourer's wife	Fisher-row	Recovery, Oct. 10	C	
199	26	F	34	Labourer's wife	Osney-lane	Recovery, Nov. 15*	C	
200	26	F	59	Shoemaker's wife	York-place, St. Clement's	Recovery		CD
201	26	F	55	Nurse	St. Aldate's-st.	Recovery, Oct. 6		CD
202	27	F	27	Labourer's wife	Orpwood's-yd., St. Thos.	Death, Sep. 27	C	
203	27	F	19	Nurse	Billing's-yard	Death, Sep. 28	C	
204	27	M	21	Prisoner	County Gaol	Recovery, Oct. 4		CD
205	27	F	20	Builder's daugh.	Cowley-road	Recovery, Oct. 7		CD
206	27	F	26	Engine-driv. wife	Church-lane, St. Thos.	Recovery, Oct. 10		CD
207	27	M	36	Prisoner *o*	County Gaol	Recovery, Oct. 2		CD
208	28	F	68		Coach & Hors.-yd., Qu.-st.	Recovery, Oct. 6		CD
209	28	F	60	College servant	Magdalen-street	Recovery, Oct. 6		CD
210	28	F	65	Fisherman's wife	Coach & Horses-yard	Recovery, Oct. 10		CD
211	29	F	52	Housekeeper	St. Aldate's-st.	Death, Oct. 3	C	
212	29	M	18	Prisoner *p*	County Gaol	Death, Sep. 29	C	
213	29	M	2	Labourer's son *q*	Faulkner's-row, St. Thos.	Death, Sep. 29	C	
214	29	F	4	Tailor's daugh.	Stean's-yard	Death, Sep. 29	C	
215	29	F	40	Nurse	Wellington-st., St. Paul's	Recovery, Oct. 3		CD
216	29	M	68	Shopkeeper	Cherwell-terrace, St. Clem.	Death, Oct. 11		CD
217	29	F	32	Servant	King-st., St. Pet. in the East	Recovery, Oct. 8		CD
218	29	M	40	Labourer	Shepherd's-row, St. Aldate's	Recovery, Oct. 6		CD
219	29	F	9		Long Wall-pl., St. Pet. in East	Recovery, Oct. 6		CD
220	29	F	65	Labourer's wife	English's-yard	Recovery, Oct. 8		CD
221	29	M	57	Labourer	English's-yard	Recovery		CD
222	30	F	7	Groom's daugh.	Friars' Wharf	Recovery in a week	C	
223	30	F	42	Labourer's wife	School-yard	Recovery	C	
224	30	F	60	Labourer's wife	Mazey's-yard	Death, Oct. 6	C	
225	30	M	14 mos.	Labourer's son	Osney-lane	Death, Oct. 2	C	
226	30	M	17	Mercer's assistant	Magdalen-st.	Recovery, Oct. 4		CD
227	30	F	24	Tailor's wife	Floyd's-row	Recovery in a week	C	
228	Oct. 1	M	17	Butcher	Vaughan's-yd., St. Thos.	Recovery, Oct. 7	C	
229	1	F	62	Labourer's wife	Wellington-street	Death, Oct. 1	C	
230	1	M	13	Laundress's son	Corbett's-yard	Recovery, Oct. 9*	C	
231	1	F	10	Labourer's daugh.	Green's-yard	Death, Oct. 2	C	
232	1	M	1	Bargeman's son	Hythe-bridge	Death, Oct. 2	C	
233	1	M	13	Printer's son	Floyd's-row	Death, Oct. 2	C	
234	1	M	14	Labourer's son	Stean's-yard	Recovery, Oct. 7	C	
235	1	M	5	Labourer's son	Roberts's-yard, St. Thos.	Recovery, Oct. 28		CD
236	1	M	4	Butcher's son	Hamel	Recovery, Oct. 6*		CD
237	2	M	12	Labourer's son	Wyatt's-yard	Recovery, Oct. 2	C	
238	2	M	5	Publican's son	Hythe-bridge	Recovery, Oct. 5	C	

n Diarrhœa and sickness on the 24th. Death 16 hours after Collapse came on.

o Very severe case. Had been constipated for three days, and took half an ounce of castor oil.

p Was quite well and at work eleven hours before his death.

q Death in about two hours from the commencement of the attack.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
239	Oct. 2	M	3	Cutler's son	Paradise-street, St. Ebbe's	Death, Oct. 2	C	
240	2	M	35	Sawyer	Gas-street	Death, Oct. 21*	C	
241	2	M	34	Painter	George-st, St. Mary Magd.	Recovery, Oct. 5	C	
242	2	M	6	Labourer's son	Brewer-street, St. Ebbe's	Recovery, Oct. 6	C	
243	2	M	72	Farrier	St. Giles's-road West	Death, Oct. 3	C	
244	2	M	30	Labourer	Shoulder of Mutton-yard	Recovery, Oct. 5	C	
245	2	M	9	Porter's son	Park-End-street	Recovery, Oct. 16		CD
246	2	F	40	Labourer's wife	Green's-yard	Recovery, Oct. 12*		CD
247	3	M	10	Plasterer's son	Hamel	Death, Oct. 8	C	
248	3	M	5	Fishdealer's son	High-st., St. Thomas's	Recovery, Oct. 6	C	
249	3	F	42	Butcher's wife	Hamel	Recovery, Nov. 22	C	
250	3	M	2	Tailor's son	Tredwell's Gard., Speedw.-st.	Recovery, Oct. 17*	C	
251	3	F	43	Laundress	Bath-street	Death, Oct. 3	C	
252	3	F	58	Prisoner	County Gaol	Recovery, Oct. 10		CD
253	3	M	60	Labourer	High-st., St. Thomas's	Recovery, Oct. 4*		CD
254	3	F	2½	Labourer's dau. *r*	Caroline-street	Death, Oct. 10		CD
255	3	F	7 mos.	Labourer's dau. *s*	Red-Lion-sq., St. M. Magd.	Death, Oct. 4		CD
256	3	F	50	Washerwoman	Fisher-row	Recovery, Oct. 12		CD
257	4	F	11	Laundress's dau.	Blay's-yard, St. Thos.	Death, Oct. 5	C	
258	4	M	10	Cook's son	Speedwell-terrace, St. Aldates	Recovery, Oct. 11	C	
259	4	M	30	Tradesman	High-st., St. Clement's	Recovery, Oct. 7		CD
260	4	M	50	None	Blenheim-place, St. Giles's	Recovery, Oct. 13		CD
261	5	M	40	Prisoner	County Gaol	Recovery, Oct. 12	C	
262	5	F	65	Labourer's wife	Osney-lane	Recovery, Oct. 19*	C	
263	5	M	40	Labourer	Mazey's-yard	Death, Oct. 6*	C	
264	5	F	27	Labourer's wife	Osney-lane	Death, Oct. 13	C	
265	5	F	2	Cutler's daughter	Paradise-street	Recovery, Oct. 8	C	
266	5	F	7		Parker's-square, St. Giles's	Recovery	C	
267	5	F	13	Labourer's daugh.	Green's-yard	Recovery, Oct. 12	C	
268	5	F	40	Prisoner	County Gaol	Recovery, Oct. 11		CD
269	5	F	75	*t*	Caroline-street	Death, Oct. 6		CD
270	5	F	60	Servant	Church-street, St. Ebbe's	Recovery, Oct. 11		CD
271	5	M	25	Painter	George-street, St. M. Magd.	Recovery, Oct. 14		CD
272	6	M	26	Copper-pl. Printer	George's-yard	Death, Oct. 8	C	
273	6	F	27	Labourer's wife	Osney-lane	Death, Oct. 8	C	
274	6	F	32	Publican	Market-street	Recovery, Oct. 9		CD
275	7	F	60	Labourer's wife	Shepherd's-row	Death, Oct. 8	C	
276	7	F	7	Carman's daugh.	Mazey's-yard	Death, Oct. 8*	C	
277	7	M	46	Carter	Mazey's-yard	Recovery, Oct. 8	C	
278	7	F	17	Brazier's daughter	Blay's-yard	Death, Oct. 9	C	
279	7	F	57	Labourer's wife	Hollybush-row	Recovery, Oct. 16	C	
280	7	F	2	Plasterer's dau. *u*	Tawney's-yard, St. Thos.	Death, Oct. 11	C	
281	7	F	59	Laundress	Cherwell-terrace	Recovery, Oct. 18		CD
282	7	M	26	Traveller	Taken to the Field of Observation	Recovery, Oct. 9*		CD
283	7	F	25	Traveller's wife		Recovery, Oct. 9*		CD
284	7	F	18 mos.	Traveller's child		Recovery, Oct. 9*		CD
285	8	M	56	Shoemaker	George-street, St. M. Magd.	Recovery, Oct. 14		CD
286	9	M	60	Tailor	Castle-st., St. Pet. le Bailey	Recovery, Oct. 11*		CD
287	9	F	2½	Labourer's daugh.	Caroline-street	Recovery, Nov. 14		CD
288	10	F	58	Gardener's wife	Lamb & Flag-yd., St. Thos.	Recovery, Oct. 24		CD
289	11	F	77	*x*	Bath-street	Death, Oct. 11	C	
290	11	F	23	Labourer's wife	Osney-lane	Death, Oct. 11	C	

r Long ill—much neglected.
s Diarrhœa for three weeks before Cholera came on.
t Refused medicine.

u Died from Hydrocephalus while recovering from Cholera.
x Refused medicine.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
291	Oct. 11	M	50	Labourer	Hamel	Death, Oct. 12*	C	
292	11	M	13	Labourer's son	Caroline-street	Recovery, Oct. 16		CD
293	12	F	39	Washerwoman	Church-st., St. Ebbe's	Recovery, Oct. 27*	C	
294	12	M	8	Shopkeeper's son	High-st., St. Clement's	Death, Oct. 14*	C	
295	12	F	5⅓	Shopkeeper's dau.	High-st., St. Clement's	Recovery, Oct. 16	C	
296	12	F	50	Traveller	Hamel	Death, Oct. 14	C	
297	12	F	47	Laundress	Ayres's-yard, St. Thos.	Recovery, Oct. 26		CD
298	12	F	89		Near the Church, Holywell	Recovery, Oct. 14		CD
299	12	F	35	Dressmaker	Lamb & Flag-yard	Recovery, Oct. 22		CD
300	13	F	30	Traveller	Castle-st., St. Ebbe's	Recovery, Oct. 17*	C	
301	13	F	32	Hawker	Orpwood's-yard	Death, Oct. 17*	C	
302	13	F	29	Needlewoman	Castle-st., St. Pet. le Bailey	Recovery, Oct. 17		CD
303	13	M	14	Printer's son	Cardigan-st.	Recovery, Oct. 21		CD
304	14	F	50	Carter's wife	Mazey's-yard	Death, Oct. 14	C	
305	14	F	47	Brazier's wife	Blay's-yard	Recovery, Oct. 28	C	
306	15	F	47	Plasterer's wife	Tawney's-yard	Death, Oct. 16*	C	
307	16	M	4	Sweep's son	St. Ebbe's-street	Recovery, Oct. 20		CD
308	16	F	50	Prisoner	County Gaol	Recovery, Oct. 22		CD
309	17	F	3	Shopkeeper's dau.	High-st., St. Clement's	Death, Oct. 18*	C	
310	17	F	45	Labourer's wife	Green's-yard	Recovery, Oct. 30		CD
311	18	F	35	Tailor's wife *y*	Turle-street	Death, Oct. 18.	C	
312	18	F	2	Painter's child *z*	Friars'-street	Recovery, Oct. 31		CD
313	19	M	40	Labourer	Fisher-row	Recovery, Oct. 26		CD
314	20	M	21	Shoemaker	Hind's-yd., Blackfriars'-road	Death, Oct. 20*	C	
315	20	F	30	Labourer's wife	Cherwell-street	Death, Oct. 21*	C	
316	20	F	24	Smock-frock mak.	High-st., St. Thomas's	Recovery, Oct. 29		CD
317	30	F	2	Shoemaker's dau.	Bridport-street	Death, Oct. 30	C	

y No premonitory symptoms—Collapse—Death in eight hours from commencement. *z* Death "from Fever."

The foregoing Table records, as far as it was possible* to determine it, the order in which the cases of Cholera and Choleraic Diarrhœa followed each other; together with the mode in which each case terminated. It is not pretended that this Table is absolutely correct, but it is as nearly so as extreme care could ensure. It was found impossible to state in addition the duration of each case. This is of less moment, because the London Tables give statistics of the duration of the disease at all ages, founded upon data far more extensive than Oxford would furnish. A tabular statement such as is here placed before us, conveys more instruction than will at first strike the reader. From it may be deduced with tolerable accuracy the course and the severity of the Epidemic, both in respect of the number of the cases and intensity of the disease, and all the detailed consequences which may be deduced from these. It furnishes also the standard of comparison with Dr. Greenhill's summaries of the Cholera Epidemics as they prevailed in 1832 and in 1849. These particulars will be elucidated in order by the aid of Maps 1, 2, 3, and Tables 2 to 7.

* See Introduction.

SKETCH MAP OF OXFORD,

(To illustrate Dr. Acland's Memoir)

SHOWING

THE PLACES AND THE ORDER

IN WHICH

THE FIRST THIRTY CASES

OF CHOLERA

appeared in

1854.

Localities of the first Thirty Cases.

§. 2. First of all then let Plate 2, or the Sketch-Map of Oxford, be compared with the Table. It will be noticed that the first case occurred in Jericho at the north of the town, in a street called Walton Road; the second at almost the extreme south, in the parish of St. Ebbe's, in Gas Street; the third, fourth, fifth, sixth, seventh, eighth, in the same block of houses as the second: the ninth in the street next to that in which this block is situated: the tenth in the same block: the eleventh in a yard leading out of St. Aldate's, part of a main street which runs north and south through the whole length of the town: the twelfth in a yard close by the ninth: the thirteenth in the extreme east of the town, St. Clement's: the fourteenth in Church Street, St. Ebbe's: the fifteenth in a house-boat on the river: the sixteenth close to cases nine and twelve: the seventeenth near the block in Gas Street: the eighteenth in the highest and most central part of the town: the nineteenth victim was a countryman taken ill suddenly in the most open part of the City: the twentieth a professional gentleman, a casual visitor in St. Aldate's: the twenty-second, another case in the block in Gas Street: the twenty-third in the neighbourhood of the first case: the twenty-fourth, twenty-seventh, twenty-eighth, and thirtieth, were the first set in the poor district of St. Thomas's: the twenty-fifth was in St. Ebbe's, near Paradise Square; while the twenty-sixth and twenty-ninth were in the neighbourhood of the great focus in Gas Street.

As far as it is proper to surmise conclusions from these data, we are irresistibly led towards the supposition that Cholera may arise without communication with infected districts on the part of those attacked, but also that it does spread under some circumstances and in some localities from person to person.

Physical Topography of the City.

§. 3. It is manifest, however, that these bald facts alone will not adequately elucidate the course of the Epidemic in Oxford. Since it has been shewn where it first arose, and what was the order of the succeeding twenty-nine cases, it will be the shortest and best course to take a general survey of the condition of the whole Town. For this purpose the Map which is placed at the beginning of the Memoir must be consulted.

Oxford is for the most part built upon a peninsula formed by the junction of the Cherwell and Isis, which takes place at the south-east angle of Christ Church Meadow. Both rivers are subdivided into, or receive, before their union, various smaller streams, while parallel to, and close by, one branch of the Isis is the Oxford Canal. The distance from one river to the other at the north of the City is about a mile. They do not materially approximate until they have both passed in their southern course the latitude of the centre of the City. They then gradually curve round to meet at the point above named. The consequence of this is that there is a flat alluvial district to the east, the west and the south of the Town, through which the rivers with their lesser streams find their way. Unhappily, upon

portions of this flat, within the circumference and round the margin of the peninsula, some parts of Oxford are built, namely, St. Thomas's, St. Ebbe's, and, immediately outside the Cherwell, St. Clement's. The remainder of the City is elevated mainly by the superposition of gravel upon the Oxford clay. The highest point of ground is at the four-cross way, where the great north and south line of traffic, St. Giles, Cornmarket, and St. Aldate's, intersects the High Street and Queen Street, which divide the Town, speaking generally, from north-west to south-east. This point is not quite fifty feet above the datum assumed by Mr. Hoggar, which gives the ordinary high-water mark above Folly Bridge, (the extreme south of the City,) as about 15 feet, and the ordinary water surface under Folly Bridge at 13 feet. In other words, Carfax (the highest point of the City) is 37 feet above the average water under Folly Bridge*.

Now a reference to the Map will shew that the first contour line includes an irregularly triangular space of no great extent round the Carfax summit. A contour line is given at every five feet of descent from the summit. The first line includes St. Martin's, a great part of St. Peter le Bailey, and All Saints' parishes, and a portion of St. Michael's; and the reader will take notice that while the second contour line 10 feet below the summit, marked therefore 39.64, is distant from Carfax only the short space down St. Aldate's to Bear Lane, it includes on the northern side of the Town, the whole of St. Giles's Street, and the eastern and western St. Giles's Roads; in fact, it may be seen to run on beyond the limits of the City northward, after comprising Broad Street, the whole of St. John's, Trinity, and Wadham, and the Parks. The centre and northern part of the Town is therefore the highest. St. Aldate's descends rapidly. The third contour level, 34.64, passes through Christ Church north of Tom Gate; the fourth south of it; the fifth below Dr. Pocock's fig-tree; the sixth south of the Christ Church stables, by the Trill Mill Stream. This last line is $6\frac{1}{2}$ feet above the average water surface at Folly Bridge. To pursue in thorough verbal detail the contour lines through all their sinuous course would be wholly unnecessary. It may be briefly stated, that the ground falls very rapidly from St. Peter le Bailey Church, at the west end of Queen Street, to Paradise Street, and that the High Street is bisected at All Saints' Church by the first contour line, at Oriel Lane by the second, at the Master of University's lodgings by the third, above King Street by the fourth, while the fifth, $11\frac{1}{2}$ feet above the water at Folly Bridge, bisects diagonally the Botanical Garden from east to west.

Many words would be unnecessary, and a few will quite suffice to state what parts of the City are still, notwithstanding the continued attention for many years

* Any one comparing these measurements with the measurements given in the Sections prepared by Mr. Macdougall Smith, under the direction of Sir Wm. Cubitt, must bear in mind that he assumes a datum 52.10″ below the point A, as seen at Sandford Lock. In their Report the same height, as Mr. Hoggar has calculated, is given for Carfax, namely, 37 feet. Carfax is marked therefore on one of Sir W. C.'s sections as 89 feet.

of the working part of the Oxford Improvement Commissioners, either imperfectly drained, or wholly undrained. A general view of these may be best taken by those who care to know the present state of the case, by attention to the parts of the Map which are shaded green. The principal of these undrained portions will be seen to be (1st) between the first and second contour lines, in St. Peter le Bailey and St. Ebbe's: (2dly) between the second and third contour lines, in the same parishes and in St. Paul's district. Below these (3dly) the whole of St. Thomas's, St. Ebbe's, St. Aldate's, and St. Clement's, and (4thly) dispersed about the City, parts of St. Giles's, Holywell, St. Peter's in the East, and St. Mary Magdalen, are in the same category *. Outside the Town also should be noticed the unhappily placed New Osney to the west, and New Hincksey to the south.

Of evils of a similar kind, but occupying less extended space, we have our share. To trouble the reader with them in detail must be certainly superfluous, the more because they have been already laid before those who are interested in them in various publications †: but still it seems worth while to present a general view of the spots which have been stigmatized by the careful investigators to whom I have referred, as either actually unhealthy, or as dangerous to health. And accordingly, having at various times verified the general correctness of their observations, I have inserted in the Map references to the principal spots to which they have drawn attention, in the following way. First of all, those parts of which they found occasion to complain, but which have since been remedied in respect of the particular ground of complaint, are indicated by dark rings, such as the two in Broad Street, which was described as undrained, whereas it now is drained. Secondly, those localities which have only been partly remedied are marked with a similar ring partly occupied by a dark wedge, as, for instance, in part of Church Street, St. Thomas's, and the wholly unremedied parts are marked by a dark disk, as may be seen at the north of the same street. Any person curious to investigate these in detail may tabulate for himself the several criticisms in the writings referred to in the foot-note. So dismal a document has of course been constructed for the purposes of this Memoir, but to trouble the reader with it in print seems unnecessary.

Nor need we indeed describe the exact sites of these evils; some few will be found even at the summit of the City around Carfax. Others, but these have in most cases been remedied since the writer described them, between the first and

* In the examination and determination of these several spots, and in detailed inquiries into various local engineering questions, I had the pleasure of much intercourse with Mr. Macdougall Smith, and have received habitual assistance, at various times within the last ten years, from Mr. Selby of Oxford.

† First, in the excellent paper of my much esteemed friend William Ormerod, on the Sanitary Condition of Oxford, in the Reports of the Ashmolean Society. Secondly, in the Report on the Mortality and Public Health of Oxford, published by the Ashmolean Society, and prepared by Dr. Greenhill and Mr. Allen. Thirdly, on the Streets of Oxford, in valuable letters, by Mr. Vincent, which appeared anonymously in the Oxford Herald. And, fourthly, in various papers published by Mr. Rowell.

the second contour lines; but unquestionably the great mass will be found about George Lane, in St. Mary Magdalen, in St. Thomas's, St. Ebbe's, St. Aldate's, and St. Clement's. In other words, in the chief of those parts described as undrained.

The Impurities of the Isis and the Cherwell.

§. 4. While the attention of the reader is still directed to these general questions relating to the condition of Oxford, as it was when the Cholera visited it in 1854, it is desirable that he should form for himself an estimate of the extent to which the Streams, as they pass through the town, are contaminated by sewage filth poured into them. Down the centre of each stream, so contaminated, is drawn a dark broken line, and the points where the greatest amount of contamination occurs, are marked by a dark triangle whose base rests on the points of the shore from which the sewage is poured. Accordingly it will be noticed that both the streams which pass through St. Thomas's are, before they enter the parish, contaminated by sewers from other parts of the Town, receiving similar foul additions from the parish itself and the Gaol; afterwards, before reaching the Water-works, various outpourings from St. Ebbe's enter the river. The stream called Trill Mill Stream, which passes through the north of St. Ebbe's and St. Aldate's, receives and contributes its quota of filth to mingle with the main branch of the Isis, as it flows in front of the walk in Christ Church Meadow, the favourite resort of the boating community of Oxford. To fence off the foul odours of this Trill Mill Stream or Pactolus from those who frequent these grounds for health and pleasure, the Dean and Chapter of Christ Church several years since, munificently erected a substantial wall. The collected impurities which flow in the course that is now described are met at the mouth of the Cherwell by the refuse which that stream, pure in comparison before it reached the City, obtains from the drainage of parts of St. Mary Magdalen, Holywell, St. Peter in the East, together with the entire refuse of the district of St. Clement's.

With this general knowledge of the condition of the City in respect of position, altitude expressed by the contour levels, relations to streams, drainage, contamination of water, and other nuisances, we may now pass to the systematic survey of the progress of the Cholera, after it was once established by the thirty cases above enumerated (page 15.) When this survey has been completed, we shall be able to form some opinion of the relation between the Disease and the Physical Condition of the City.

The Intensity of the Disease in successive periods of the Epidemic.

§. 5. In tracing the progress of the Choleraic Disease through the people of Oxford, the Cholera of the true Asiatic type will be first considered, and afterwards the so called Choleraic Diarrhœa and the simple Diarrhœa will be briefly touched upon. The distinction which the Oxford Practitioners drew between these two forms of Disease will hereafter be more explicitly stated. First, then, the Cholera will be described in respect of Time, and, secondly, in respect of Place.

Under the head of Time, the duration and the relative intensity of the Disease during the Epidemic will be considered.

The total number of Cases of true Cholera was 194, or 7.33 per 1000 of the population. The Deaths were 115, or 4.34 per 1000. The Deaths were therefore in proportion to the Cases at the rate of 59.28 per cent. If we examine the rate at which the Epidemic spread by weeks, we shall find that whereas in the first three weeks there occurred but 3 cases of Cholera, in the succeeding three there were 83. In the three weeks that next followed 91 cases occurred. In the three succeeding, 16. In the thirteenth and last week, 1. It may be said therefore that the first and the last quarters of the Epidemic epoch were occupied by the onset and the decline of the Disease respectively, while the two intervening quarters shewed it at its maximum=the Epidemic lasting thirteen weeks*. Or, if we inquire into the ascent of the Disease up to the end of the sixth week, or the middle of the Epidemic, we shall find that there were 12 cases in the first week of the second quarter, 35 in the second, and 36 in the third.

The Epidemic did not decline from this central point at the same rate as it increased, for the seventh week had 35 cases, and there were 37 in the ninth; but then, in the tenth week the new cases fell to 11, nearly the same number as occurred in the fourth week. There were only 5 new cases in the eleventh, none in the twelfth, and 1 in the last. Any person desirous of calculating the intensity of the Epidemic in proportion to the population in each of these weeks can do so. But these and other facts may be readily seen in the Tables. If we inquire into what was the Mortality in proportion to the cases in each of the quarters, the following may be noted. In the first quarter, of the 3 cases 2 were fatal. Of the 83 cases in the second quarter of the Epidemic period, 48 died, or 57.8 per cent. In the third quarter, out of 91 cases, 52 died, or 57.1 per cent. And in the last quarter, of the 16 cases, 12 died, or 75 per cent.: and the only case which occurred in the last week died. From which it would appear, that, after the 3 first cases (of which 2 were fatal) in the first quarter, the *number of cases* increased greatly in the second quarter, slightly in the third, and greatly diminished in the last; the mortality in the third quarter was rather less than in the second, viz. 57.1 and 57.8 per cent. respectively; and the proportional fatality of the Disease materially increased in the last quarter.

Again, referring to the *weeks* it seems proper to notice that in the seventh week the deaths were in the proportion of 65.7 per cent., but in the eighth and ninth 57.9 and 48.7 per cent. respectively of the persons attacked. In the small numbers with which we are dealing, much stress must not be laid on such statistics, and yet they are noticeable.

These facts are summed up in the following Tables, together with the corresponding facts in the two previous Epidemics.

* It will be noticed that in the thirteenth week there was only one Case and one Death. This occurred in an infant. We are at liberty to ask whether this were genuine Cholera. If not, the Epidemic lasted only eleven weeks.

TABLE II.

Reported Cases and Deaths, from Choleraic Disease, in

DISTRICTS.	Aug. 12.				Aug. 19.				Aug. 26.				Sep. 2.				Sep. 9.				Sep. 16.				Sep. 23.			
	Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.	
	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C
North.																												
St. Giles	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	2	..	..	..	..	..	..	..	..	..
St. Paul	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	1	2	..	..	..	..	..	..	..
Total	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	3	2	1	2	..	..	..	..	..	..	..
West.																												
St. Thomas	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	9	..	6	..	7	..	4	3	6	..	3
Central.																												
All Saints'	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	3	..	2
Holywell	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
St. Martin	..	.	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..
St. Mary Magdalen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	1	..	..	..	..
St. Mary the Virgin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
St. Michael	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	1	..	1	..	..	..	..
St. Peter le Bailey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	2	1	..	..
St. Peter in the East	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	..	2	1	..	..	..
Total	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	1	1	2	9	..	9	5	4	..	2
East.																												
St. Clement	..	..	..	..	..	..	.	..	..	..	..	..	..	1	..	..	1	2	1	1	2	5	..	2	4	2	..	2
South.																												
St. Aldate	.	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	3	..	2	5	4	1	1	4	7	..	5
St. Ebbe	..	1	..	..	..	1	..	1	..	..	..	..	1	9	..	3	3	13	1	7	..	7	..	4	3	7	1	4
Total	..	1	..	..	..	1	..	1	..	..	..	..	1	11	..	5	3	16	1	9	5	11	1	5	7	14	1	9
Extraparochial.																												
County Gaol	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	3	..	1	..	5	2	..	2	9	1	..	..
Workhouse	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	2	1	2
Total	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	3	..	1	..	5	3	..	3	10	3	1	2
Strangers ill in street.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
New Hincksey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	2	1	..	1	1	6	..	5

TABLE II.

the different Parishes in the weeks ending Saturday,

Sep. 30.				Oct. 7.				Oct. 14.				Oct. 21.				Oct. 28.				Nov. 4.				DISTRICTS.	TOTAL.			
Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.			Cases.		Deaths.	
CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C		CD	C	CD	C
																								North.				
..	..	..	..	1	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Giles	4	2	2	1
1	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Paul	4	5	0	3
1	..	..	..	1	3	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Total	8	7	2	4
																							..	West.				
3	9	..	6	6	18	..	8	3	5	..	4	3	1	..	1	..	..	..	..	..	..	..	..	St. Thomas	19	55	0	32
																								Central.				
..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	All Saints'	0	6	0	5
..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Holywell	1	0	0	0
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	..	St. Martin	2	1	0	0
2	..	..	..	2	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Mary Magdalen	7	2	1	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Mary the Virgin	0	1	0	0
..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Michael	2	2	0	2
3	..	1	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Peter le Bailey	7	5	1	3
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Peter in the East	4	2	1	2
7	..	1	..	3	1	1	..	4	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	Total	23	19	3	13
																							..	East.				
4	1	1	..	4	2	2	2	2	3	..	2	..	2	..	2	..	..	..	..	..	..	..	..	St. Clement . ..	17	18	4	11
																								South.				
4	3	..	1	..	4	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	St. Aldate	13	23	1	13
1	4	..	2	1	8	..	4	..	2	..	1	2	1	..	1	..	..	..	..	..	1	..	1	St. Ebbe	11	54	2	28
5	7	..	3	1	12	..	6	..	2	..	1	2	1	..	1	..	..	..	..	..	1	..	1	Total	24	77	3	41
																								Extraparochial.				
2	2	..	2	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	County Gaol ..	25	6	1	4
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Workhouse	1	3	1	3
2	2	..	2	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	Total	26	9	2	7
..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Strangers ill in street.	3	1	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	New Hincksey ..	3	8	..	7
																								Total	123	194	14	115
																								Total Cases from Choleraic Disease, of which the residences, &c. are known.	317		..	
																								Total Deaths	..		129	

TABLE III.

Table shewing the Number of Cases and of Deaths from Cholera in each week of the Epidemic in 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1832 Cases	5	17	16	12	16	18	10	6	19	22	14	5	..	..	..	5	..	3	3	..	..	2	1	1832.
1832 Deaths	4	11	8	4	10	10	3	4	9	9	4	7	..	..	..	..	..	..	2	1	..	..	..	Last Case,
First Case, June 24.																								Nov. 28.
1849 Cases	3	10	21	27	27	26	12	11	5	1	..	1												1849.
1849 Deaths	2	4	12	11	10	18	9	6	1	1	1	..												Last Case,
First Case, Aug. 11.																								Oct. 28.

	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	
																											1854.
1854 Cases	1	2	1	1	..	..	3	12	12	35	18	36	30	35	22	19	20	37	10	11	6	5	..	..	..	1?	Last Case,
1854 Deaths	..	1	..	1	..	..	..	5	6	19	1	24	2	23	2	11	3	18	..	7	..	5	..	..	..	1	Oct. 30.
First Case, Aug. 6.																											

For a more detailed account of the Disease in 1832 and 1849, see also Tables IV. V. and VII., with the letterpress which explains them.

Were the attacks in the different localities simultaneous?

§. 6. It has been already stated that the first case occurred in the extreme north of the City, and the second in the south. By a reference to the Table which follows at the close of the 5th Section, it will be seen that not till the fourth week were any other localities invaded. Then two cases occurred in St. Aldate's, also in the south of the Town; and one in St. Clement's, the extreme east. In the fifth week cases occurred in the north, south, east, west, in the centre, and on the outskirts of the Town. In the three following weeks no further cases occurred in the north. In the ninth the Disease reappeared in the north, having retained its hold in all the other districts, and it lingered in the west, in St. Thomas's, and in St. Ebbe's, until the end. We may therefore notice concerning St. Ebbe's, one of our worst and lowest districts, that it was visited in the first week, and was not freed until the last. In St. Thomas's, a parish that needs and receives much care and surveillance, though it did not break out until the fifth week, when once there, it remained till the last week but two.

Proportions of Cases and Deaths in the several Districts.

§. 7. It has been shewn that the Cases of Cholera in 1854 were 194, and the Deaths 115, and the Population being 26,474, the Cases per 1000 are 7.33, and the Deaths 4.34. It has to be considered in what proportions these cases occurred in the several parishes, and whether there was any notable difference in the mortality. First of all, no cases occurred in any College or Hall, in the Infirmary, or in the City Gaol. By far the highest proportional number of Cases of Cholera and the greatest proportional mortality occurred in the County Gaol, and it may as well be also noticed here that among the 128 persons within those walls, there occurred actually a greater number of Cases of Choleraic Diarrhœa than in the whole parish of St. Thomas's, or in the united parishes of St. Aldate's and St. Ebbe's, or in the nine parishes forming the Central Ward. The Cases of Cholera in the Gaol being in the proportion of 47, and the Deaths of 31.25 per 1000: the Deaths being to the Cases in the proportion of 66.6 per cent. The next greatest number of Cases per 1000 occurred in St. Thomas's, viz. 21.81: the next in New Hincksey, 14.04: the next in St. Aldate's, 12.16: St. Ebbe's, 11.60: and the lowest mortality, in proportion to the population, was in the centre of the City, where, throughout the whole of the Central Ward, it was 2.28; but in All Saints', one of the parishes, at the much higher ratio of 10.73.

It seems undesirable to multiply words concerning subjects which the reader may at will study with the help of the subjoined Table. Perhaps the most extraordinary facts there recorded are under the head of Extraparochial; viz. the immunity of the Colleges and Halls, the Infirmary, and the City Gaol, and the exceeding intensity both of the disease and the mortality just adverted to, in the County Gaol: this last most important fact will be considered presently.

TABLE IV.

Table shewing the Cases, Deaths, Population, and Cases of Cholera per 1000 *in* 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

PARISHES.	1832. Deaths.	1832. Cases.	1832. Population (Census of '31.)	1832. Cases per 1000.	1849. Deaths.	1849. Cases.	1849. Population (Census of '51.)	1849. Cases per 1000.
NORTH.								
St. Giles	4	5	1736	2·88	3	5	2438	2·05
St. Paul	11	26	1750	14·86	3	5	2634	1·90
Total ..	15	31	3486	8·89	6	10	5072	1·97
WEST.								
St. Thomas	8	14	1700	8·24	10	24	2090	11·48
CENTRAL.								
All Saints	..	2	560	3·57	1	1	559	1·79
Holywell	1	1	944	1·06	..	..	901	..
St. John	..	..	122	..	..	..	107	..
St. Martin	1	2	490	4·08	..	..	449	..
St. Mary Magdalen (exclusive of City Gaol)	2	5	2410	2·08	1	2	2449	0·82
St. Mary the Virgin	..	..	419	..	..	..	391	..
St. Michael ..	..	..	971	..	..	..	1022	..
St. Peter le Bailey	1	2	1236	1·62	6	15	1315	11·41
St. Peter in the East	2	4	1126	3·55	..	..	1144	..
Total ..	7	16	8278	1·93	8	18	8337	2·16
EAST.								
St. Clement ..	36	74	1836	40·30	1	3	2269	1·32
SOUTH.								
St. Aldate	8	13	1452	8·95	11	14	2131	6·57
St. Ebbe	16	31	3123	9·93	30	54	4656	11·60
Total ..	24	44	4575	9·62	41	68	6787	10·02
EXTRAPAROCHIAL.								
Colleges and Halls	..	..	1634	..	..	..	1251	..
Infirmary	..	..	145	..	..	..	150	..
Workhouse	..	..	219	..	4	7	291	24·05
Gaols *	3	3	162	18·52	5	14	233	60·08
Total ..	3	3	2160	1·39	9	21	1925	10·91
NORTH	15	31	3486	8·89	6	10	5072	1·97
WEST	8	14	1700	8·24	10	24	2090	11·48
CENTRAL	7	16	8278	1·93	8	18	8337	2·16
EAST	36	74	1836	40·30	1	3	2269	1·32
SOUTH	24	44	4575	9·62	41	68	6787	10·02
EXTRAPAROCHIAL	3	3	2160	1·39	9	21	1925	10·91
UNKNOWN ..	2	2	..	..	..	..	..	..
Total ..	95	184	22035	8·35	75	144	26480	5·44

PARISHES.	1854. Deaths. CD	Deaths. C	Cases. CD	Cases. C	Population (Census of '51.)	Cases of Cholera in 1000.	Deaths from Cholera in 1000.
NORTH.							
St. Giles (exclusive of St. Paul, Workhouse & Infirmary)	2	1	4	2	2530	·79	·40
St. Paul	0	3	4	5	2634	1·90	1·14
Total ..	2	4	8	7	5164	1·36	·77
WEST.							
St. Thomas (excluding St. Paul, and the County Gaol, but including New Osney)	0	32	19	55	2522	21·81	12·69
CENTRAL.							
All Saints	0	5	0	6	559	10·73	8·94
Holywell	0	0	1	0	901	0·00	0·00
St. John	0	0	0	0	107	0·00	0·00
St. Martin	0	0	2	1	449	2·23	0·00
St. Mary Magdalen (exclusive of City Gaol)	1	1	7	2	2461	0·81	0·41
St. Mary the Virgin	0	0	0	1	391	2·56	0·00
St. Michael ..	0	2	2	2	1022	1·96	1·96
St. Peter le Bailey	1	3	7	5	1315	3·80	2·28
St. Peter in the East	1	2	4	2	1144	1·75	1·75
Total ..	3	13	23	19	8349	2·28	1·56
EAST.							
St. Clement ..	4	11	17	18	2139	8·41	5·14
SOUTH.							
St. Aldate	1	13	13	23	1891	12·16	6·87
St. Ebbe	2	28	11	54	4656	11·60	6·01
Total ..	3	41	24	77	6547	11·76	6·26
EXTRAPAROCHIAL.							
Colleges and Halls	0	0	0	0	650	0·00	0·00
Infirmary	0	0	0	0	101	0·00	0·00
Workhouse ..	1	3	1	3	304	9·87	9·87
Gaol (County) * ..	1	4	25	6	128	46·98	31·25
Total ..	2	7	26	9	1183	7·61	5·92
NORTH	2	4	8	7	5164	1·36	·77
WEST	0	32	19	55	2522	21·81	12·69
CENTRAL	3	13	23	19	8349	2·28	1·56
EAST	4	11	17	18	2139	8·41	5·14
SOUTH	3	41	24	77	6547	11·76	6·26
NEW HINCKSEY ..	0	7	3	8	570	14·04	12·28
EXTRAPAROCHIAL	2	7	26	9	1183	7·61	5·92
Strangers ill in street	0	0	3	1	?	?	?
Total ..	14	115	123	194	26474	7·33	4·34

* In the *City* Gaol there never was in either Epidemic a case of Cholera, or of serious Diarrhœa, and therefore it is not entered in 1854.

The proportion of Deaths to Cases in Private Houses and Public Institutions.

§. 8. In each of the three Epidemics provision was made for the care of Cholera Cases in a separate Hospital: the general Hospital (the Radcliffe Infirmary) having declined to receive any Cases of Cholera. An opinion had been expressed that in the previous Epidemics the chance of recovery for those who were removed to a distance from their homes was diminished, and therefore in 1854 a careful arrangement was made for providing Nurses and all that might be required at the homes of all the poorer classes attacked: this last arrangement was most efficient and gave entire satisfaction. It was found in 1854 impossible to obtain two separate localities, to serve, one as a House or Field of Observation, and the other on which to erect a Hospital; and therefore there being no power of sending the casual or destitute cases that could not be nursed at home, either to the Workhouse or to the Infirmary, there was no course left but to use a remote corner of the Field of Observation as the site of a Hospital. Some delay took place in giving effect to the division and arrangements in this combined establishment, and it turned out, unfortunately, that more cases than might have been anticipated were necessarily taken into the Hospital at the Field. Several cases also that were sent to the Refuge portion of the Field were taken ill. In the previous Epidemics this last had not occurred. It is not possible to speak too highly of the assiduity of the Medical men who attended the poor at their own homes, or of the satisfactory and highly creditable manner in which the Nurses, under the management of Mr. Cartwright and of a Lady who forbids the mention of her name, discharged a duty to which they were so suddenly called. I may be excused for recording here that this training and discipline helped to make several of them efficient Nurses in the East. Bearing in mind then that these preparations were not made till the Epidemic was at its height, it is interesting to scrutinize the statistics of the result, and to compare them with such corresponding data as are derived from the previous Epidemics. This is done in the following Table.

TABLE V.

Table shewing the Proportion of Deaths to Cases in Private Houses, and in Public Institutions.

	1832. Cholera.			1849. Cholera.			Cholera. 1854. Choleraic Diarrh.					
	Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Deaths per cent.
Taken to the Cholera Hospital. ..	24	13	54·17	39	25	64·10	‡33	17	51·51	11	..	..
Attacked in Field of Observation.	..	..	..	..	..	..	11	7	63·63	..	..	..
Private Houses.	152	76	50·00	105	50	47·62	146	85	58·22	86	12	13·95
County Gaol.	..	..	..	..	..	..	6	4	66·66	25	1	4·00
Workhouse.	..	..	..	..	..	..	3	3	100·00	1	1	100·00
Total ..	*184	*95	51·63	144	75	52·08	†199	†116	58·29	123	14	11·38

* "Including 8 Cases and 6 Deaths in the parish of St. Giles, unknown whether treated at home or not."—*Greenhill.*

† In the total of this Table for 1854 there are 5 more cases of Cholera and one more death from Cholera than in any other Table. After the other Tables were completed, it was discovered that 4 more cases had occurred in the Field than had been recorded: and that one case returned to me as a death in the Workhouse was really that of a person who was taken ill at the Workhouse, but who died in the Field: and so this case is returned doubly.

‡ The record of the Hospital Cases is not such as could be wished. The Deaths took place: concerning some of the Cases there is uncertainty.

In the first place it is exceedingly satisfactory to learn, that, although the Board of Health was unable to obtain such Hospital accommodation as they desired, the per-centage of Deaths among the Hospital Cases, according to the data furnished to the Writer, was less than in either of the previous Epidemics. The Cases *taken there* appear to have died at the rate of 51.51 per cent.: those taken ill in the Field at the rate of 63.63 per cent. Both taken together at the rate of 54.54 per cent. It is somewhat remarkable that an altogether different result obtained in Private Houses, the County Gaol, and the Workhouse, for all the Workhouse cases reported to the Writer are returned as Deaths. Of the 6 cases in the Gaol 4 died, and of the 146 treated in the Private Houses 85, or about 58 per cent. died. This result of the Cases treated in the Private Houses seems to confirm an opinion which the Medical Practitioners in the City generally expressed, that the Cases in this Epidemic were more severe than those in either of the previous ones, and it absolutely contradicts one which I am almost ashamed to say I have occasionally heard, that Cases were returned as Cholera which scarcely deserved the name.

The only further remark which need be made in commenting on this Table, and one which I have earnestly and respectfully urged to the best of my ability, but hitherto without effect, is, that when we consider that several cases were taken ill in the Field of Observation in 1854, whereas none were so attacked on previous occasions, we should not be left to the shift of procuring accidental Hospital accommodation for Epidemic disorders; but that there should be, for the safety of all, efficient wards *always ready* to meet such lamentable emergencies. That much the most convenient course would be for the general Hospitals of the country to maintain such wards in connection with them, (wherever, at least, they have open space, and are not located in the middle of a dense population,) is so obvious that no arguments are needed to enforce it.

The Cholera in relation to Sex, Age, and Occupation.

§. 9. However interesting it might be to investigate and to state in minute detail the precise relation of the number of attacks and deaths to the Sex, Age, and Occupation of people, yet the result of the procedure would be in no way proportional to the labour. A population of 30,000 is too small an one to permit such a subdivision as must be made before any deduction, practically valuable, concerning the real effects of Sex, Age, and Occupation could be made. The *general* results deducible from the reported Cases may be given as follows.

TABLE VI.

Ages of Males and Females attacked by Cholera and Choleraic Diarrhœa in 1854.

		All Ages.																			
		Both Sexes.	Males & Females.	Under 5 years.	5—	10—	15—	20—	25—	30—	35—	40—	45—	50—	55—	60—	65—	70—	75—	80—	85—
Cholera.	Cases.	194	M 86	14	14	9	4	2	4	9	3	7	8	2	2	2	3	2	1	0	0
			F 108	15	4	7	5	10	5	12	11	6	5	9	4	3	1	3	1	0	0
	Deaths.	115	M 49	12	4	5	2	2	2	2	1	3	6	2	1	2	2	2	1	0	0
			F 66	10	7	3	2	3	4	7	3	4	3	6	2	3	0	3	1	0	0
Chol. Diarrh.	Cases.	123	M 63	6	3	4	5	4	7	7	5	6	1	6	3	3	2	0	1	0	0
			F 60	7	2	0	0	3	4	4	4	9	5	3	6	3	3	0	1	0	1
	Deaths	14	M 6	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0
			F 8	4	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0

From this Table it may be noticed that of the 194 Cases of Cholera, 108 were Females, and only 86 Males, of all ages. Inasmuch therefore as the population of Oxford in 1854, 26,474, contained 13,197 (?) Males and 13,277 (?) Females, it would appear that 6.52 in each 1000 of Males, and 8.13 in each 1000 of Females, were attacked; and inasmuch as of the 115 Deaths, 49 were Males and 66 were Females, it follows that the Males died in the proportion of 56.9 Deaths to 43.1 Recoveries, and the Females in proportion of 61.1 Deaths to 38.9 Recoveries. There was therefore a greater probability among the Females that they would have the Cholera; and of those who had it, there was also a greater probability that they would recover if they were Males.

The Mortality varied according to Age.

We learn that in London in the same Epidemic between the ages of 15—25, of 100 persons attacked 34.9 died. With us the mortality between the same ages was at the rate of 42.85. In London between the ages 25—35, the mortality was 35.4 per cent. = with us 50. In London the Deaths in proportion to the Cases between 65—75, were 58.2 to 100 Cases—with us between the same age, in the proportion of 77.77 in every 100 persons attacked.

Mortality according to Occupation.

The Occupations of the attacked and destroyed having been examined and sifted, I am satisfied that no useful result would be gained by attempting to draw any elaborate conclusion from the inquiry. From the survey the most obvious facts are that the four first, the sixteenth and the seventeenth, classes of the Census Classification, (all persons of more or less "station in life" or ease,) probably suffered the least: 8 in these classes are noted as attacked, but of the 8, 6 died: the stress fell, numerically the heaviest, upon the labouring classes in all their ramifications: they died in the proportion of 56 in each 100 attacked. But in Oxford, especially during the absence of the University, the number of residents of the five just-named classes is proportionally small; and therefore those engaged in business and in labour, proportionally large. One Medical man died of Cholera; he had neglected serious Diarrhœa, knowing and noting it, for nearly a week. He was not engaged in attendance on Cholera. Another who had attended Cholera cases was in danger from a severe and protracted Choleraic Diarrhœa. Several other Medical men suffered from Diarrhœa. One returning home at night was so frequently affected on his way that he could scarce reach home. The Nurses were tolerably exempt; but one died. The Washerwomen did not suffer as a class, as far as I can learn. But this will be spoken of hereafter in Chapter VI. During the ninety days which we may say to have been the period of the Disease, five men were engaged in

emptying cesspools. They worked during nearly forty nights of the ninety. Not one had even Diarrhœa. This last circumstance has been noted in other places, and suggests a very important question concerning the noxious or innoxious nature of collections of ordure, when freely exposed to the open air.

It need hardly be repeated that Oxford is not a place large enough to allow us to draw any safe conclusions concerning the liability of certain Occupations to Cholera, or their exemption from it, or to form data for the proportional mortality of various ages.

The Progress of Diarrhœa and Choleraic Diarrhœa.

§. 10. However urgent the other symptoms, no case was, I believe, returned as Cholera in which the evacuations were bilious. Of the more serious forms of Diarrhœa wherein cramps, vomiting, and even more or less collapse would occur, there were many cases in the City. But the mortality was very small compared to that of the Cholera. It appeared *generally* in the same localities, at the same times, and with nearly the same intensity at the different periods, as the genuine Cholera. In consequence of the severity of some of the cases, it appeared desirable to tabulate those, of which the names and residences have been returned, with those of the Cholera, so that the reader can in each of the Tables follow them through the Epidemic of 1854. They were not so examined in the previous Epidemics.

First, then, with respect to the Diarrhœa.

If we examine what is certainly known of the amount of Diarrhœa, we have some curious information. Dividing the Epidemic into four periods of three weeks* each, commencing with August 6 and ending October 22, it appears that we have no certain record concerning the first five weeks, or until the last week of the second quarter. In that week there were returned 1313 Cases of Diarrhœa: in the third quarter 2603 Cases: in the last quarter 527. These Cases, it will be remembered, do not include Choleraic Diarrhœa; and they do not include Cases prescribed for at the Infirmary.

Now in the sixth week there were out of every 1000 persons nearly 50 persons prescribed for, on account of Diarrhœa alone, by the Medical men, independently of the Chemists: in the third quarter, (the seventh, eighth, ninth weeks,) nearly 100 in every 1000: in the last quarter 19.90 in every 1000.

If then we assume that in the second quarter the attacked were the same as in the third, (as they were nearly with respect to Cholera, and there is reason to believe that there were actually a greater number of Diarrhœa Cases in that quarter,) and that the first quarter had as many Cases as the last, then it follows

* There was an isolated Case in the thirteenth week not reported to the Board, and not entered therefore in the Meteorological Diagram; see below.

that at the least 6260 Cases were attended by the regular Practitioners on account of Diarrhœa alone. Some of the Cases were perhaps relapses; but as I have stated, the applicants at the Infirmary (more than 400) are not included. There cannot have been therefore less than a fourth of the population, at the lowest estimate, actually treated by the Medical men for this form alone in the manifestation of the Pestilence. That very many more were under its influence may with equal certainty be concluded.

Secondly, with respect to the severer forms of Diarrhœa, returned as Choleraic Diarrhœa.

Of these Cases 123 are entered in the first Table. The Deaths among these 123 were 14; or the proportion of 11.5 Deaths to 100 Cases. But it is known that many more occurred whose names and addresses were not returned, and which therefore I could not tabulate in respect of their residence, &c. The numbers returned to the Board in the second quarter of the Disease were 165: in the third quarter, 61 Cases. The Deaths therefore were not proportionally as numerous as would appear by the weekly table: for all the Deaths of the Epidemic are recorded, but not all the Cases. And taking the reported Cases in the two middle quarters as 226, and the Deaths 14, we find the Deaths in Choleraic Diarrhœa to have been only 6.2 in every 100 Cases. No fatal Case of *simple* Diarrhœa has been returned.

In the Meteorological Diagram at the end of the volume the general progress of Diarrhœa and Choleraic Diarrhœa, in relation to the Cholera, may be most easily traced*.

Comparison of the Epidemic of 1854 *with those of* 1832 *and* 1849.

§. 11. The general result of these Choleraic visitations of Oxford may be given in a few words.

The first interval of freedom from the Pestilence was seventeen years; the second interval was five.

The Cases per 1000 of the inhabitants in 1832 were in round numbers 8: in 1849 only 5: in 1854, 7.

If we exclude from each year the Cases in St. Clement's, whereon the Disease fell so heavily in 1832, the years of Pestilence claim, in the order of their precedence, 5.4, 5.8, 7.2 cases per 1000 of the inhabitants.

The recoveries in proportion to the deaths were in the proportion of

51.63 deaths to 48.37 recoveries in 1832.
52.08 deaths to 47.92 recoveries in 1849.
59.27 deaths to 40.73 recoveries in 1854.

* The Reader should bear in mind that the numbers in that Diagram correspond with those returned to the Board, not with the more limited identified Cases in the *Tables*, as is explained above.

Cases of Cholera in the several localities in Oxford in 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

	'32	'49	'54	
			CD	C
Northern Parishes.				
St. Giles.				
Best's Yard	..	2	..	..
Blenheim Place	..	1	1	..
Parker's Square	..	..	..	1
Pauling's Yard	1	..	..	..
Plantation Road	3	..	..	..
St. Giles's Road West	..	2	1	1
St. Giles's Street	..	..	1	..
Near the Church	..	..	1	..
Unknown	1	..	..	..
St. Paul.				
Cardigan Street	..	..	2	..
Jericho Gardens	22	..	..	2
Nelson Street	..	2	..	..
Portland Place	..	2	..	1
Union Street	..	1	..	..
Near University Press	1	..	..	..
Near Walton Terrace	3	..	..	..
Walton Road	..	..	1	1
Wellington Street	..	..	1	1
Total	31	10	8	7
Western Parish.				
St. Thomas.				
Ayres's Yard (Brazier's Yard)	..	..	1	..
Billing's Row (Peacock Yard)	..	1	..	2
Blay's Yard (South Court)	..	1	..	3
Church Lane	..	..	1	..
Corbett's Yard	..	..	..	2
Faulkner's Row	..	1	..	1
Fisher Row	1	1	2	2
Green's Yard (Abbey Row)	..	..	2	3
Hamel	2	2	1	4
High Street	1	7	2	2
Hollybush Row	..	1	1	2
Hythe Bridge	..	2	1	4
Lamb and Flag Yard	..	..	2	..
Orpwood's Row (Bookbind. Yd.)	2	4	..	3
New Osney	..	..	2	6
Osney Lane	3	1	..	8
Park End Street	..	..	2	4
Payne's Yard	..	1	..	..
Robert's Yard	..	..	1	..
Should. of Mutt. Yd. (Norman Ct.)	1	1	1	3
Steane's Yard (Park End Place)	..	..	..	3
Tawney's Yard (Holyfield's Yd.)	..	..	..	2
Vaughan's Yard (Wareham Ct.)	..	1	..	1
Unknown	4	..	..	..
Total	14	24	19	55

	'32	'49	'54	
			CD	C
Central Parishes.				
All Saints'.				
Amsterdam Court	..	1	..	..
Carter's Yard	..	..	..	3
High Street	1	..	..	..
Turle Street	..	..	..	3
Unknown	1	..	..	..
Holywell.				
Holywell Street	1	..	..	..
Near the Church	..	..	1	..
St. Martin.				
Cornmarket Street	1	..	1	1
St. Aldate Street	..	..	1	..
Unknown	1	..	..	..
St. Mary Magdalene.				
Bound's Yard	1	..	..	..
Broad Street	..	..	1	..
Broken Hayes	3	..	..	..
Friar's Entry	..	..	1	..
George Street	..	..	2	1
Magdalen Street	..	..	2	..
Nunney's Buildings	..	1	..	..
Red Lion Square	..	1	1	..
St. John Street	..	..	..	1
Unknown	1	..	..	..
St. Mary the Virgin.				
Oriel Street	..	..	..	1
St. Michael.				
Cornmarket Street	..	..	1	1
Market Street	..	..	1	1
St. Peter-le-Bailey.				
Alder's Yard	..	2	..	..
Arnold's Passage (Victoria Place)	..	2	..	..
Buckland's Row	..	..	1	1
Castle Street	..	5	2	1
Coach and Horses Yard	..	..	2	..
Faulkner's Row	..	5	..	..
Queen Street	1	..	1	..
Pollard's Yard (Albert Place)	..	..	1	3
St. Ebbe Street	1	1	..	..
St. Peter-in-the-East.				
Fidler's Yard	1	..	..	..
Gravel Walk	1	..	..	..
High Street	1	..	1	1
King Street	..	..	2	..
Long Wall	1	..	1	..
Tarry's Yard	..	..	..	1
Total	16	18	23	19

Cases of Cholera in the several localities in Oxford in 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

	'32	'49	'54	
			CD	C
EASTERN PARISH.				
St. Clement.				
Alms' House	1	..	..	1
Bath Street	6	..	3	4
Caroline Street	26	1	5	1
Cherwell Street	6	1	2	3
Cherwell Terrace	..	..	2	..
Opposite Old Church	1	..	..	..
Near Cowley House	1	..	..	..
Cowley Road	5	..	2	..
George Street	4	..	1	..
George's Yard	7	..	..	3
High Street	13	..	1	5
Hitchcock's Row	..	1	..	..
Iffley Road	..	..	..	1
London Place	2	..	..	..
New Street	2	..	..	..
York Place	..	..	1	..
Total	74	3	17	18
SOUTHERN PARISHES.				
St. Aldate.				
Alms' House	1	..	..	..
Brewer Street	..	..	..	1
Bridewell Square	..	..	1	..
Carter's Yard	2	2	..	1
Opposite the Church	1	..	..	..
Dragon Yard	..	..	1	..
English's Yard	..	..	6	..
Floyd's Row	..	..	1	3
Nelson's Yd. (Nelson's Passage)	..	..	1	..
Pembroke Street	1	..	..	..
Pipe-maker's Yard	1	..	..	..
Rose Court (Rose Place)	..	3	..	..
St. Aldate Street	1	3	1	3
Sheppard's Row	1	1	1	1
Sparke's Yd. (St. Aldate's Place)	1	3	1	5
Toovey's Yard (School Yard)	1	..	..	1
Treadwell's Gard. (Speedwell Pl.)	..	..	..	1
Wyatt's Yard	..	2	..	6
Boat-House on the River	..	..	..	1
Unknown	1	..	..	..
St. Ebbe.				
Abbey Place	..	3	..	..
Beef Lane	1	..	..	..
Carried over	12	17	13	23

	'32	'49	'54	
			CD	C
St. Ebbe (*continued*)				
Brought up	12	17	13	23
Blackfriars' Road	1	5	..	7
Ditto. Eyles' Buildings	..	3	..	..
Ditto. Hunt's Row	..	..	..	1
Ditto. Hind's Yard	..	..	..	1
Ditto. Waterloo Buildings	..	..	..	1
Brewer Street	..	..	..	1
Bridge Street	1	..	..	1
Bridport Street	..	2	..	1
Near Bridport Street	..	1	..	..
Bull Street (New Street)	7	4	1	1
Castle Street	..	..	..	2
Church Street	2	1	3	3
Commercial Road	..	..	..	2
Friars' Street	3	6	1	..
Friars' Wharf	..	..	2	3
Gas Street	..	1	..	14
Godfrey's Row	9	..	..	3
Lee's Yard	..	1	..	..
Littlegate	4	1	1	..
Mazey's Yard	..	..	1	6
Milbank	..	6	..	..
New Street or Cross (Union St.)	..	2	..	..
Paradise Square	..	..	..	1
Paradise Street	..	4	..	2
Penson's Gardens	..	3	..	..
St. Ebbe Street	..	..	1	1
Speedwell Street	..	10	..	1
Speedwell Terrace	..	1	..	1
Union Place	..	..	..	1
White's Yd. (Chaundy's Yard)	..	..	1	..
Wood Street	3	..	..	..
Total	42	68	24	77
New Hincksey	..	..	3	6
Thames Street	..	..	..	2
The Weirs	2	..	..	..
Total	2	..	3	8
EXTRA-PAROCHIAL.				
Workhouse	..	7	1	3
County Gaol	3	14	25	6
Strangers seized in the street	..	..	3	1
Total	3	21	29	10
Unknown	2	..	..	..

N. B. After these Tables were in type the Names of many Yards were changed by order of the Commissioners. The New Names are generally added in parentheses.

The Disease, therefore, excluding the exceptional case of St. Clement's, was more severe numerically, and more fatal in the last than either of the previous Epidemics, and returned, as has been noted, after a much shorter interval.

In Table IV. a summary is given of all the Cases of Cholera and of Choleraic Diarrhœa in their respective localities. They are brought into comparison with Dr. Greenhill's Tables for 1832 and 1849, reproduced in parallel columns. A more detailed account of the localities is furnished in Table VII, and to that Table the reader is referred. This reference is all that can be required, if at the same time the Map of Oxford, at the beginning of the volume, be studied for the purpose of noting the localities stigmatized as unhealthy by the sanitary writers before alluded to.

A few words then will sum up these Tables. The Cholera occurred with nearly equal intensity in the Northern Parishes in all the Epidemics, if we exclude one spot, Jericho Gardens, where it raged in 1832, when once it entered there. It has been pointed out that a better class of tenants inhabit them now than twenty-five years ago. But this district (St. Paul's) is still either wholly undrained, or insufficiently drained.

If we were to judge of St. Thomas's by the relative intensity of the Epidemics in the Parish, we should say that it was becoming worse and worse. There occurred in the three Epidemic years respectively, 14, 24, 55 Cases. But we know that this parish though poor is not neglected: it is thoroughly visited and assiduously cared for by its Clergyman; and every good pastor exercises a beneficial influence on the temporal condition of his flock. We know besides that some yards, formerly execrable, are improved. But the City water was in 1854 distributed there, and this may in some instances have been the cause of the increase of the disease. It is remarkable that every yard and street which was attacked in 1832 and 1849, was again visited, with one exception, in 1854.

St. Clement's suffered *more* in 1854 than in 1849, but much less than in 1832. The great difference between the Epidemic of 1832 and that of 1849 must certainly be presumptively attributed to the condition of the Water supply: this is explained in a succeeding chapter. Possibly the increase of intensity in 1854, if to be accounted for, may be accounted for by the foul and low state of the river.

The Southern Parishes suffered in 1854 nearly twice as much as in 1832, but only a sixth more than in 1849. The Water supply was bad; some of the wells were foul to a degree; one stank; some were dry; and the City water wherever distributed was unfit for use at such a time. The drainage is as bad as it has ever been. The Trill Mill stream, near whose banks disease has long been known to flourish, is uncovered still.

CHAPTER II.

On the Cholera in the Neighbourhood of Oxford.

§. 1. While the Epidemic was in Oxford, deaths from Cholera occurred also in the neighbourhood. A survey of these may show something of the manner in which the Epidemic was spread in this part of our Island; and at all events it will point out the share which Oxford had in receiving or in imparting the Disease: it may also help to elucidate some other points in the natural history of Cholera.

Inquiries have been made into the History of the Cases which occurred in all the Registration Districts of Oxfordshire, excepting Henley; and in those of Berkshire, called Faringdon, Abingdon, Wantage, and Wallingford *. In each of these such questions were put to Medical Practitioners in each place as were likely to elucidate the mode of arrival and spread of the Disease. The statements that follow will be best understood by referring to the Sketch-Map, Plate 4, "District round Oxford." In this Map the course of the several valleys of the Isis, Cherwell, and Thame, with their tributaries, and the situation of the principal towns in or near them are represented. The scale of the Sketch is about a quarter of an inch to a mile.

Deaths from Cholera occurred in Lechlade, Brize-Norton, Abingdon, Harwell, Brookhampton, Little Milton, Albury, Oakley, Brill, Winslow, Banbury, Little Bourton. The names of all these places are surrounded in the Map by an oval line. After the best inquiry that I have been able to make, I cannot ascertain in what manner the Cholera invaded these places, or from what cause.

On further reference to the Map it will be seen that double lines radiate from Oxford to certain places, viz. to Woodstock, Besselsleigh, Wantage, Steventon, and Hailey. The Deaths which occurred in these places may be traced to immediate personal communication with Oxford.

At other places it will be noticed that the double lines terminate in a star. These places are Garsington, Hincksey, and Witney, through Hailey. In these places it would appear that the Cholera having been conveyed from Oxford, was communicated directly or indirectly from persons who had been in Oxford to others who had not; it then spread with more or less intensity.

Lastly, Headington is connected with Oxford by a single line, which indicates that the Cholera spread at Headington, probably but not certainly, in consequence of communication with the City.

The above brief summary clearly marked in the Sketch-Map is of course the sum and substance of much inquiry. I subjoin parts of the Evidence which has led to these conclusions.

* See Population Tables I. Divisions II. and III. 1852.

Ist, then, with respect to the class in which Cholera occurred without a trace of communication with Oxford, it need only be said that I am indebted to highly respectable Practitioners in each locality for sifting the several Cases concerning which this negative conclusion is arrived at.

As to Lechlade there was but one Case. Mr. Powell states, that the child in whom it occurred had eaten largely of wild fruit the day before, and died within twelve hours.

I am informed concerning the Brize-Norton Case, that there is some doubt whether it was Asiatic Cholera.

With regard to Abingdon, Mr. Martin informs me that there is no reason for supposing that the person who first died of Cholera had either been in a Cholera locality, or been in communication with those who had; but a Nurse who attended upon him died.

At Harwell two Cases occurred in the same house, one within a week of the other; the first being a child, the second its mother; the house being unclean and having a foul drain. Mr. Lightfoot informs me there is no reason whatever for supposing they had communicated with infected places.

The Deaths which occurred at Little Milton, in the Thame district, cannot be traced to communication with infected sites. They afford an excellent illustration of Cholera originating, to all appearance, spontaneously, and then either spreading to persons in immediate contact with the first attacked, or to persons placed in circumstances identical with those of the first Case. Mr. Kimpton has carefully investigated their history. There were five Deaths in one family: the first on September 21, the second and third on the 25th, the fourth on the 27th, the last on the 2nd of October. A child aged four was first attacked. No person belonging to the house had been in an infected place, no articles had been received, nor had any person visited them from such a place. The site of the cottage is healthy, well drained, situated on a lime rock, and there was little illness in the village. The "Marriotts' cottage" was one of two joining each other, but unconnected with and at some little distance from any other dwelling. The family were crowded at night, ten persons sleeping in two small rooms. The only Cases in Little Milton were those in the family where the first Case occurred. The Nurses and Attendants washed the linen and removed the evacuations. All had Diarrhœa, one severely, but none had Cholera. There is no ground for supposing that the food of this family had any share in producing the Disease. There is a good well near, which could not be contaminated from any source, except from an old burial-ground many yards distant, unused from the time of Cromwell.

Mr. Barker, the Union Medical Officer of Brill, has related to me the circumstances connected with the spread of the Disease in his district. They are pecu-

liarly interesting. It would seem as though every known or supposed means of favouring the extension of the Disease had existed in this generally fine and healthy village. The first person attacked was a labourer, who had Diarrhœa, followed by severe Choleraic symptoms: he recovered; but the woman who attended upon him was attacked with Cholera, and died in six hours. This is an instance of severe Diarrhœa in one person having some probable connection with Cholera in a second, neither having been in a Cholera locality. The third Case occurred in a woman who had been in or near Oxford, at the time when the Epidemic there was about at its height. She had also attended the funeral of the Nurse just named. The fourth person washed the clothes of the third, and died in twelve hours: and that same night, the 1st of October, a woman who had been near none of these Cases, living at a distance from them, but who was wife to a man who cleaned out the cesspools, had Cholera: she recovered. It is unnecessary to seek out all the Cases which subsequently occurred; but it must be named that a fortnight after this last-mentioned date a woman died, near whose house privy soil and sewer filth had been spread as manure; and not only did she and other neighbours suffer and die, but many had Diarrhœa in various degrees of intensity.

Mr. Walker informs me concerning the first victim of the Disease at Oakley, that there is no reason whatever for supposing that he had been in any kind of communication with a Cholera district. He was taken ill while at work in a field at 8 in the morning, and died at 8 at night. But this man lived in a very poor and dirty cottage, in one room of which, (and that room singularly unclean,) slept father, mother, a grown-up son, a grown-up daughter, and two children. Of these the boy died, the son was attacked and recovered, the mother, being the nurse of all, was taken ill and died: and a woman that occasionally helped her had Diarrhœa of a severe form, but was saved. No other Cases occurred in the immediate neighbourhood. What conclusions may be drawn from these and the like touching incidents will appear in the sequel.

At Winslow a tramp arrived from Stony Stratford, and put up in a crowded lodging-house. He had severe Diarrhœa and died. But, as I have noticed in other similar cases, where the spread of the Disease might have been anticipated, no other person, so Mr. Denne informs me, materially suffered.

At Little Bourton one person died of Cholera. Mr. Chesterman was informed by his widow, that her husband had been in Banbury, and in the street where nearly all the Banbury Cases occurred, on the day previous to his attack. In connection with him no other Case arose.

There were several fatal Cases of Cholera at Banbury, and to these hereafter it will be necessary most especially to revert. A man was employed one night in emptying a cesspool. The day following he died, to use Mr. Douglas's words, with

Choleraic symptoms. The next person attacked was the Nurse, his sister, who lived in a perfectly healthy part of the town, and died after a few hours' illness. All the Cases which occurred subsequently to these two were in persons who either were engaged in opening a sewer in a low locality, or lived in its immediate neighbourhood. Mr. Douglas adds, that there is not the slightest reason to suppose that any of the persons who had Cholera at Banbury had been to Oxford, or to any other place in which Cholera was prevailing.

IInd. We have next to consider the class of localities in which a death from Cholera is registered, and in which that death may be shewn to have been attributable to the existence of the Disease in Oxford, but which did not contaminate the district where it occurred. These places are indicated in the Map by a double line connecting them with Oxford. They are Woodstock, Besselsleigh, Wantage, Steventon, and Hailey. There was but one Case at Woodstock. Of him Mr. Palmer says, that he died on Monday, October 2nd, having been in Oxford on the previous Thursday, and having suffered from Diarrhœa from that time, and having passed through Abingdon on his way. He was an itinerant small dealer at fairs.

At Wantage one fatal Case occurred. This happened in a man who left Oxford about the same time as the man who died at Woodstock. He was an irregular liver and in a state of extreme poverty. He had Diarrhœa when he reached Wantage, having had it for two days. When Mr. Barker saw him, he was in a state of collapse, and never rallied. Of his history it is important to observe, that he was lodged in a common lodging-house, that many persons were therefore in contact with him, and that the discharges from the stomach and the bowels were left for some time unremoved.

The labourer who died at Steventon had just returned from Oxford, and died soon after reaching his home.

The only two localities remaining under this head are Besselsleigh and Hailey. Both of these are of peculiar interest for the following reasons. First of all, with regard to the one Case that occurred at Besselsleigh. Harriet Thomas, aged 22, had lived in Oxford for some time and nursed a family named Maizey, who had Cholera. She left Oxford feeling ill, went through Abingdon, and late in the night on which she reached Besselsleigh was attacked with vomiting and purging, and died in collapse in about twelve hours. Now it is remarkable enough that a man of Hailey, named Robert Rhymes, came from thence to Oxford to seek work, called upon the said Maizey, who is the owner of a horse and cart employed in odd work, and who has acquired, by great industry though in weak health, such property as he possesses. He lived in a miserable spot in St. Ebbe's, called Maizey's Yard. So miserable and so foul was one of the dwellings in this place, that the writer, in going to see a man there in extreme collapse, thought it necessary for the safety

of those to be employed about the Case to break through a portion of the roof, in the hope of securing some ventilation and of removing the Choleraic stench and effluvia. To this place the man of Hailey repaired, and saw Maizey the first day that he was up and about after emerging from Cholera. He engaged himself to Maizey and went home. This happened on Wednesday. He was taken ill with unmistakeable Cholera, and seen by Mr. Edwin Batt of Witney. He recovered, and no other case occurred in Hailey. But the first Case which occurred in Witney occurred in the person of Richard Plummer, who conveyed medicine to Robert Rhymes at Hailey while he was ill.

IIIrd. Whereas then the Cholera which occurred at Hailey, in a single Case, without spreading there, must be considered as having been conveyed from Oxford, so the cases at Witney may be stated to have been mediately, through Hailey, derived from the same source. It is not proposed to offer here any explanation of the remarkable facts detailed in the last few words, but merely to state them; nor is it desirable in this place to give a complete account of the course of the Cholera through Witney. Some details will be found in the Appendix.

What may be stated here however is this, that the first Case occurred in a low, damp, unclean, crowded house; in the same house and in the same yard in which it appeared in the Epidemic of 1849. And generally it may be remarked, that the Epidemic followed the same track, and showed the greatest intensity in the same parts of the Town as on the previous occasion; as I have learnt from the two brothers, Messrs. Edwin and Augustin Batt, whose well known kindness and sagacity were actively employed during the severe visitation of their town.

Garsington was immediately connected with Oxford during the Epidemic in the following manner. The man Ruffle, who was the first person attacked, had not been into Oxford; but on September 12 he received into his house two persons, one a man who had been engaged about persons suffering from Cholera, and the other his son convalescent from the Disease. The latter, still weak, occupied his father's bed during the day, and up to the time at which Ruffle got into it for the night, in the course of which he was attacked with Cholera and died in a few hours. The next night Ruffle's wife was attacked and died, and the day following his grandson was attacked, but recovered. For all these facts I am indebted to the sifting care of Mr. Cogan of Wheatley.

Now Ruffle's dwelling was the half of a double cottage. The back of one end of this building was but five yards distant from the front of a similar tenement containing three dwellings. They were inclined to each other at an angle, so that the other end of Ruffle's cottage was fourteen yards apart from the corresponding end of the other. There were therefore five dwellings under these two roofs. The second cottage in Garsington which was attacked was that under the same roof with

Ruffle's. The third was the one five yards from the back of his dwelling. And the fourth attacked was under the same roof with the third, that viz. which was fifteen yards from the second. All these were low, wet, crowded, filthy. Eleven Cases of Cholera occurred in them, besides Cases of bad Diarrhœa. There were four Deaths. From the nature of the locality all were in communication with one another. Of thirteen neighbours and friends engaged about the first and second Case, or led to the house by curiosity, eleven were attacked with Cholera within a few days. Two out of four men who carried the first and second corpse to the grave were attacked. One died after a few hours' illness: the other of consecutive fever. A young woman who nursed a neighbour was taken ill in her own house. Her bed was afterwards occupied by two of her brothers, and both were attacked on the first night that they slept in it.

The last spot which is connected with Oxford by the double lines and the star indicating the spread of the Disease is New Hincksey. The facts relating to it have been thoroughly investigated by Mr. Hitchings, and are simple enough. New Hincksey is a cluster of houses about half a mile to the south of Oxford, separated by the Isis and adjoining meadows. It is of course in constant communication with Oxford. A man died of Cholera in the City. His widow took his clothes and bedding, saturated with evacuations, to New Hincksey. She there washed them and hung them up in the garden at the back of her house to dry. On the day following a child in the adjoining house was taken ill, and subsequently seven others sickened in the three houses of which the first was the centre.

What is written above is an epitome of the most important facts that I have been able to ascertain of the progress of Cholera in a district of which Oxford may be called the centre. The conclusions which may be drawn from this history, and the hypotheses which may be founded upon it, will be given in another section.

CHAPTER III.

Local Causes which may have influenced the Progress of the Disease.

§. 1. All that need be said under this head will be dismissed in a few words. It has been surely shown by sanitary writers that there is some connection between bad living, using the words generally, and disease; and that the Fever localities (taking Fever as a type of Endemic Disease) are generally, though not invariably, the same as the Cholera localities. To go over this ground in detail would be tedious. As far as Oxford is concerned, the reader may soon satisfy himself on the point by referring to Mr. Ormerod's paper on the Sanitary Condition of Oxford, or by inspecting again the Map of Oxford at the commencement of this Memoir,

and comparing for this purpose the marks which designate Cholera, and the marks which show foul and diseased spots, according to previous sanitary writers on Oxford.

That Oxford may however furnish her chapter on this subject, to the general sanitary survey of the Country, the most striking particulars which were noticed during this Epidemic may be briefly stated, under the heads of Personal Condition of the People: State of their Dwellings: Effects of Elevation: Condition of the Drainage and Water Supply.

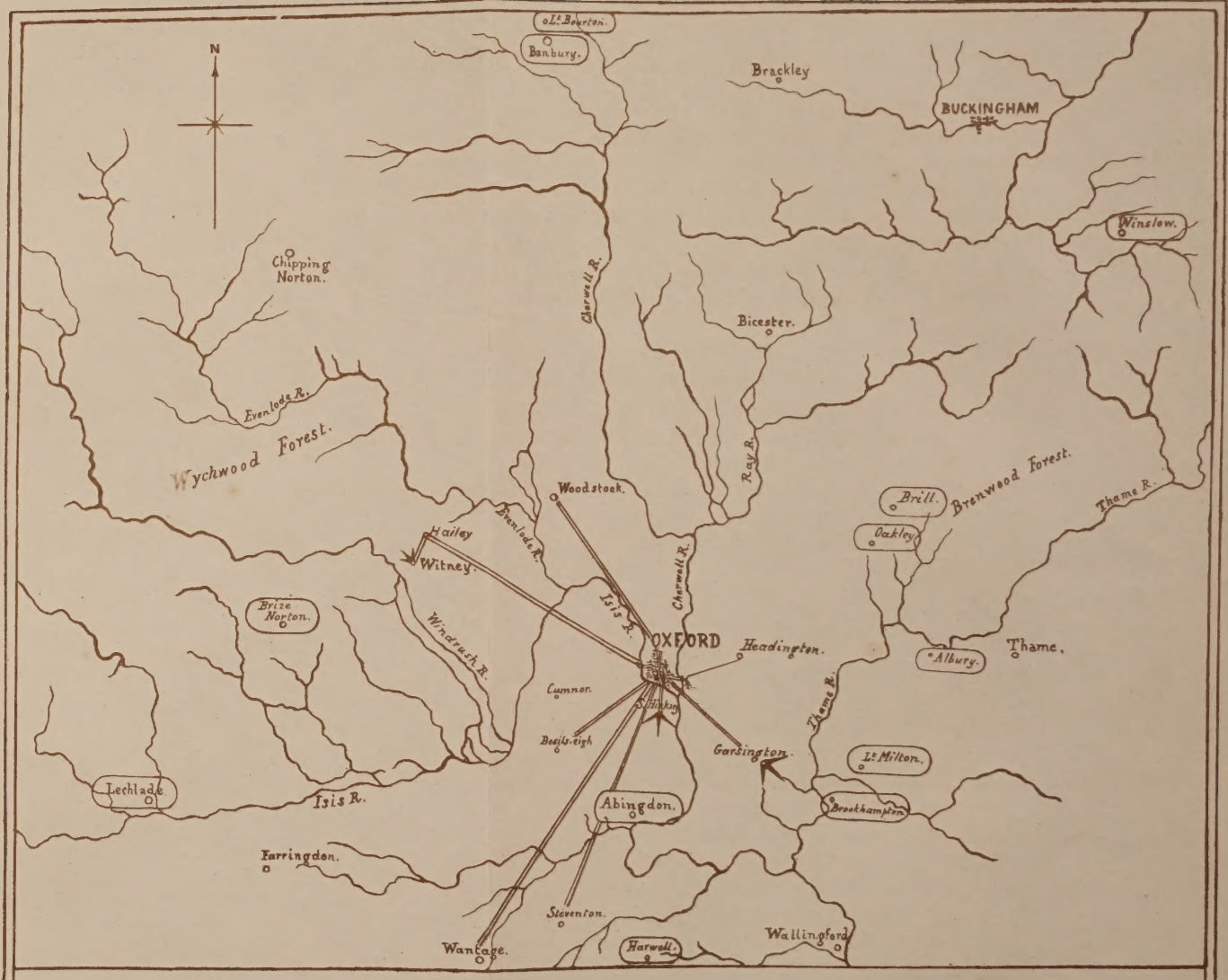
General Condition of the People.

§. 2. It is well known that the business of Oxford is in a great measure dependent on the presence of the University. The long vacation is therefore a great trial to the poor or the improvident. The Cholera occurred towards the close of the vacation. Many families were wholly without work. It was not in my power to ascertain rigorously in what proportion the families who had no work or little work suffered from Cholera, when compared with the more prosperous; but I am able to state positively, that the Diarrhœa and Cholera were most rife, speaking generally, in the poorer places, and that in some alleys when meat was given, the Diarrhœa was arrested.

State of the Dwellings of the Poorest Classes.

§. 3. For residents in the City of Oxford it would be useless to furnish any description of the dwellings of the less affluent and of the most indigent of our people; and unless there were some tale of horror to unfold, to all others uninteresting. But in my judgment there are few, if any, *very bad* dwellings in Oxford, as the civilized world has counted badness. In London and Edinburgh, and other large towns, I have visited places incomparably worse than any that I know of here at present: though even here, I have seen dogs' litter from an upper room used as a kennel for fancy dogs, fall through the gaping planks on the bed of a woman in her confinement, on the floor below*: but nothing of the sort is now in my knowledge. To say that in all the alleys the houses are good, would be untrue; but to designate them generally as not fit for habitation, unjust. Many of even the lowest class of houses are airy, open, with gardens behind them; some with water-closets, carefully kept by benevolent landlords. But in St. Thomas's and in St. Ebbe's also are individual rooms and staircases whose existence is to be deplored. And there is scarcely any remedy for some of these places, but the remedy which followed the Plague of London. There is no mending them. Several private persons some years since, and before the New Lodging House Act had passed, took one of the worst alleys

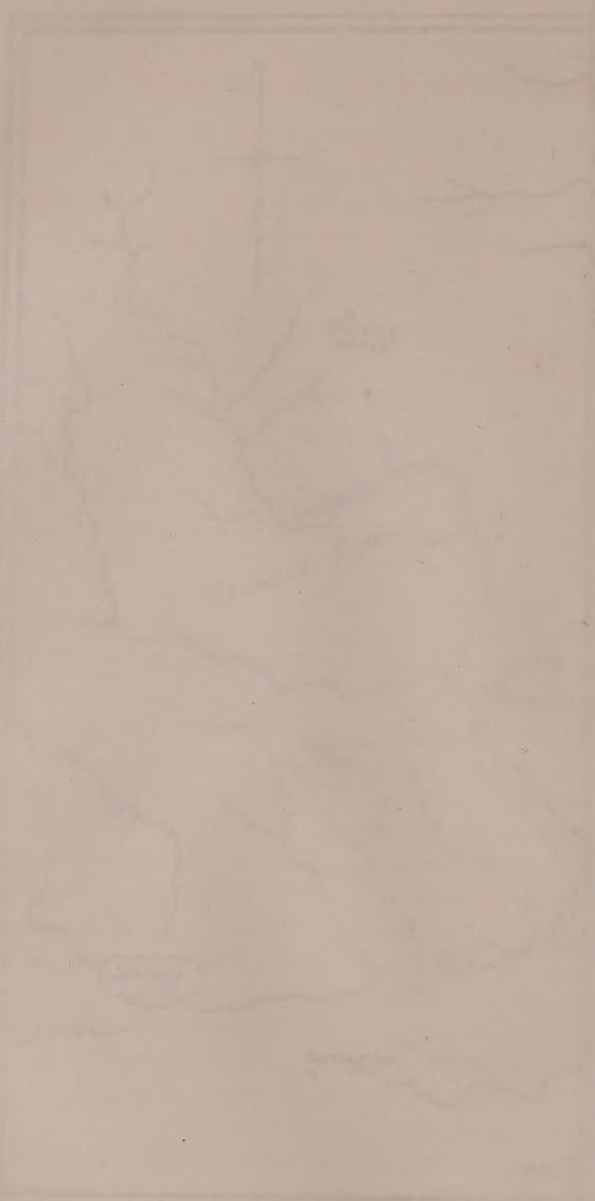
* The place has been altered some years, and the owner is at rest.



DISTRICT ROUND OXFORD,

to Illustrate Dr Aclands Memoir on Cholera in 1854.

The Towns not enclosed in an oval Line, had no death from Cholera
The Towns enclosed in an oval Line had one or more deaths from Cholera
The Towns to which a double line passes from Oxford had one death dependent on communication with Oxford - but the disease did spread.
The Places that have a double line ending in a Star received the disease from Oxford and when there it spread.



in the Town to make Model Lodgings; but in consequence of the high price we were obliged to pay, and the small rents we obtain, it has commercially failed; and though we have uprooted a bad population, we have still no Model Houses. The fault of many of the lower tenements, built a century or more ago, is radically implanted in them. The rooms are too low; the outlet too confined; they are in some places built back to back, and have no thorough ventilation. Some improvement has here and there been gained by placing Arnott's Valves in the rooms; but people in not strong health have a practical prejudice against freshness in the air, and stop them up. Where such rooms exist, there bad habits tell tenfold on the people. In some of the Wynds of Edinburgh the poorest rooms were once the habitations of the nobles. Open stairs lead to high though divided rooms; and much as fever and other sickness rages in them, yet through these larger approaches and the higher apartments, the blessed air of the breezy Firth can sometimes wind its way. Low rooms, crowded, in a stagnant atmosphere allow no such hope of avoidance of these lower states of health, which with poor and scanty food drag the poor into consumption and all forms of scrofulous disease. How many Out-patients of the Infirmaries and Dispensaries in England at this moment require meat, and not medicine!

I repeat it—as houses are counted bad, ours are not bad. But land is dear here, and freeholds are scarce, and improvements are almost impossible. There are some who may read these pages, to whom life is fresh, and the wretchedness of the world unknown, who cannot credit the statement I made of the woman's bed: who would not believe that a young prostitute, possessor of one wretched room, fell down among us with the Cholera, upon her sole household goods, the sweepings of a tailor's shop, half covered by the ragged ticking that had once made the list-shreds serve as a bed. Poor girl! she lived through the disease, spent some months in a Penitentiary—and—returned to her ways.

It is obvious that the last instance of misery which has been named is due to faults of a moral rather than a physical kind. Of all such cases indeed it may be truly said that terrible as is their physical suffering, more terrible far their mental misery, and their incapacity for receiving comfort.

Supposing, however, that mental misery does depend upon moral as well as on physical causes, and supposing that sin does produce temporal wretchedness, shall we say that for either reason the awakening of the dreamers by the sudden shock of Pestilence, and their quick passage into the shadow of death, is less terrible? Must we for these reasons refuse to see how some of our fellow-men, by whose doors we daily pass, can live within them? Judge now.

Soon after 5 one morning, a woman awoke in the agony of cramps, with intense and sudden collapse. She was seen at 6. There was in her room no article of furniture, but one broken chair; no bed of any kind, no fire, no food; she lay on

the bare boards; a bundle of old sacking served for a pillow; she had no blanket, nor any covering but the ragged cotton clothes she had on. She rolled, screaming. One woman, scarcely sober, sat by; she sat, with a pipe in her mouth, looking on. To treat her in this state was hopeless. She was to be removed. There was a press of work at the Hospital, and a delay. When the carriers came, her saturated garments were stripped off, and in the finer linen and in the blankets of a wealthier woman she was borne away, and in the Hospital she died.

Her room was cleaned out: the woman that cleaned it had next night the Cholera. She and her husband were drunk in bed. The agony sobered *her*, but her husband went reeling about the room: in a room below were smokers and drinkers. Then a woman of the streets in her gaudiness came to see her. They would not hear reason, but drank more spirits. The victim of the Disease cried out to the end, that her soul was everlastingly lost; and she died.

The care of these things weighed heavily.

The City was in charge of a small unpaid Committee of the Board of Guardians, of whom the health of one, and the business of a second, forbad the attendance. The University was in its Vacation: the Cholera ceased: the University returned. The Cholera required a special Rate to defray its expenses. The bills seemed high, and in time were paid. The Epidemic is now a matter of history. Have we profited by its lessons?

In speaking of the condition of dwellings, the state of the houses and alleys have not been fully spoken of. They are greatly improved, and generally it has been said that there are not any that are *very bad*. In some, however, heaps of refuse accumulate after they have been removed, and this nothing but very efficient surveillance and a complete system of Draining and Water Supply will ever remedy. For further details concerning them, the reader is referred to the dark marks on the Map above described, and to the Sanitary Works before alluded to.

After what has been here stated, it remains to be said, that no where could be found instances of more simple self-devotion, and more genuine kindness of heart, than were to be seen in Oxford, and at this time: that as one whose duties have enabled him to know something of the lives of the poor, I will dare to say, that there live in this City persons who, in spite of meanness of occupation, and extreme penury of life, possess and show to an eminent degree, though in their humble sphere, those moral qualities, whose cultivation is one of the main purposes of existence for every one: that the gentle nobleness of their natures might excite the sympathy of all, and that it might be as a model, if not of cultivation of mind, yet of personal character and conduct, in those great struggles that are the common trial of all mankind.

Elevation.

§. 4. In the Registrar General's Report on Cholera in 1849, it was stated that "the elevation of the soil in London has a more constant relation with the mortality from Cholera than any other known element." It became therefore my duty to endeavour* to ascertain how far this was the case here also. From the examination of the Contour Lines, which may be noticed upon the Map, the following Calculations† have been deduced:

				In the three Epidemics.
These were in the highest, 10 feet in	1832	4 Cases		
Below 49·64 above 39·64.	1849	13		36
	1854	19		
In the succeeding, 10 feet in	1832	20		
Below 39·64 above 29·64.	1849	30		61
	1854	11		
In the next, 10 feet in	1832	53		
Below 29·64 above 19·64.	1849	47		186
	1854	86		
On the borders of the river the average surface of the water at Folly Bridge being (36·47) feet below the summit at Carfax.	1832	20		
	1849	44		118
	1854	54		

But these figures 118, 186, 61, 36, represent only the actual cases recorded on the Map in the three Epidemics, not the proportion of the fatality, and not the proportion of the cases to the population. These proportions must be now given.

The Contour Line 29.64 may be taken as dividing the City into an upper and a lower level, it being 16.47 feet above the average water level at Folly Bridge, and 20 below the summit at Carfax. If the cases which occurred in the three Epidemics collectively, including St. Clement's‡, be reckoned, it is found that 141 cases occurred in the upper level, and 362 in the lower: and estimating the populations in the upper level at 14,200, and those in the lower level at 12,300, it will be found also that on the average of the three Epidemics there occurred 33.09 cases in each 10,000 of the people in the upper level, and 98 per 10,000 in the lower: and estimating the deaths at 54.30 per cent., on the average of the three

* No Contour Lines of the City being published, I was fortunate in being able to obtain them from Mr. Hoggar, the Engineer, from his unpublished drawings: they are reproduced in my Map.

† This calculation excludes New Hincksey, and also St. Clement's: the case of the latter is wholly anomalous. There was in 1832 a great mortality in St. Clement's. Taking the whole of the Epidemics of 1849 and 1854, in St. Clement's there were in the five feet below the highest Contour line 9 cases: in the ten feet next the River line 17 cases.

‡ In St. Clement's, in the exceptional year 1832, half the cases were above, and half below the 29·64 Contour.

Epidemics, the deaths were at the rate of 17.97 per each 10,000 in the upper level, 53.26 per each 10,000 in the lower level.

Generally, therefore, the conclusions of the learned and accomplished Dr. Farr are fully corroborated by the case of Oxford. The mortality on our lower level was proportionally three times as great as that of our upper level.

Effect of Density of Population.

§. 5. The area of the University and City of Oxford is supposed to be about 361 acres ||, exclusive of the streets. Of these the University occupies 82. The population, therefore, inhabiting the City portion during the time of the Cholera being about 25,824, there were on an average 92.8 persons to an acre; or if the City and University together be reckoned, the population would be at the rate of 73.3 to an acre. Some parts however are far less dense than others. Assuming the average of the residents in the University during the prevalence of Cholera at 600, as I have done, there were not more than 7.3 persons to an acre of the University. Of these persons not one had the Cholera. The poorest districts in Oxford are also as is usual the densest, as they are the lowest. These are St. Thomas's, St. Ebbe's, and St. Aldate's. Of these St. Ebbe's contains about 39 acres §, exclusive of streets, and 119 persons to an acre; St. Aldate's, 12 acres, and 157 persons to an acre; or both parishes together, 128 to an acre. St. Thomas's, that part at least called the Parish, may be estimated at about the same as St. Aldate's.

In Oxford, therefore, the parishes which, if we except perhaps certain limited house blocks, are the densest, were also the most grievously visited by Disease; but this cannot be attributed to the density alone, but to other causes also; these have been here and elsewhere alluded to. In London it was noticed that the densest parts of the population (246, 256, 290 persons to an acre) were not the most severely attacked. On the contrary, that the mortality was far higher in some of the more open, than in the more dense districts.

Effects of Imperfect Drainage and of Water Supply.

§. 6. In the early part of the first chapter it was pointed out how the lowest and poorest parts of the City are those which are also the least well drained: upon this subject there is no need of further repetition. Still it is but just to record the opinion, that it is not imperfect drainage alone which is the cause of ill health in undrained places, though unquestionably it is *a* fundamental cause. Where the drainage is bad the basements are damp and foul; in old towns the ground is, in some places, saturated with liquid ordure to an amount scarcely to be

|| For this estimate I am indebted to Mr. Frederick Morrell.

§ Mr. Selby has calculated this amount.

estimated; and the wells are more or less impure; and good tenants will not occupy if they can go elsewhere. It is strange to see how one evil, in moral and physical causes alike, drags others in its train. Mr. Ormerod's Sanitary Map of Oxford points out in an admirable manner the way in which the Epidemic and Contagious Diseases are collected round special centres: and, as may be seen by the Map in this Memoir, these are also about the undrained parts.

But I fully agree with the general bearing of the remarks on the subject of Water Supply, which were published by Mr. Rowell, in the Oxford Journal, Sept. 2, 1854. These remarks I need not recapitulate, as in Oxford they are well known; but for readers out of Oxford it may be said, that they tend to prove that in districts where the water is impure, the Diseases that have just been named are the most rife: the notable instance of St. Clement's may be repeated. In 1832, there were, out of 174 Cases in all Oxford, in this parish alone 74 Cases of Cholera, and in 1849 only 3. During the former Epidemic the inhabitants had filthy water from a sewer-receiving stream; and in 1849 from the springs of Headington, conveyed thither soon after 1832. In 1854, out of 194 Cases, but 18 occurred in St. Clement's; a proportional increase which would tend to show, what indeed we have various other evidence of, that the Water Supply, though it may be one mode, is not the only mode of conveying the Cholera poison.

An instance occurred in the County Gaol which from its character may, I think, be accepted as almost an experimentum crucis, on one or two points in the investigation of the effect of Water Supply. The conclusions will be given in Chap. VI.: the facts only are here recorded. In the first place it is to be noted, we have here two Gaols, a City Gaol and a County Gaol. Neither in 1832, nor in 1849, were there any cases in the City Gaol: in the County Goal there were in 1832, 3 cases; in 1849, 14. The knowledge of these facts made me very anxious to note the circumstances of the Gaol in any subsequent Epidemic. This year (1854) the opportunity presented itself. The surgeon of the County Gaol, Mr. Wood, having reported that there were many cases of Choleraic Diarrhœa, and some of Cholera of special malignity in the Prison, the Writer was desired to inspect the Prison. The result of this inspection is quoted from the Report presented to the Magistrates.

"There have been 4 cases of Cholera, of which 3 have died. The first, aged sixty, had no premonitory symptoms at all. The second, aged forty-five, had had Diarrhœa for a few hours, and had been treated for it. The third had been ill for some days. The fourth had probably been ailing for some hours without stating it. The two first and the fourth cases were fatal. The first had been in the prison about one month: the second and third for several months: the fourth was still in the reception cell."....."Three of the officers resident in the prison, and one who resides out of it, have had Diarrhœa."....."I regret to add, that on paying a second visit to the Gaol yesterday, I found another sudden and virulent case of Cholera. It terminated fatally."

"Already out of 12 debtors, 5 have had Diarrhœa: out of 59 felons and misdemeanants, 19: out of 15 trial men, 7: of 9 women, 6: making a total of 37 out of 95 attacked by Diarrhœa in a fortnight, besides the cases of Cholera above described."

On this same day (September 29) it was ascertained that in the City Gaol there had been no cases of Diarrhœa of any consequence, and none of Cholera. The two Prisons are not far from each other. The County Prison is admirably managed—the Officers are attentive humane men—the Surgeon an accomplished Practitioner —What could be the cause?

At a short distance from the Gaol flows a branch of the river, through St. Thomas's, one of those described at p. 24. It passed through a Mill, the Castle Mill—is dammed up for the Mill-head above the Mill—and when flowing through the Mill, forms a brisk stream in the Mill-tail, carrying with it whatever impurities it obtained in the Mill-head. When the Mill is not at work, and the water is ponded up, the Mill-tail becomes, as all such spots do, a nearly stagnant pool. This year (1854) the river was unusually low, and at the date of my inspection of the Prison, this pool contained various garbage stationary on its surface and its bottom. Further, a drain from the prison flowed into the pool; within ten feet of the mouth of this running drain, the supply-pipe from the prison sucked up the contents of the pool for the prison use. From this source the kitchen coppers were supplied, and with this water the soup and the gruel, important articles in the weekly diet, were made.

No sooner was the attention of the Governor of the Prison drawn to this fact—barren though it might appear to be—than the pipes were cut off: and what followed? whereas before this there had occurred 20 cases of Choleraic Diarrhœa, and 5 cases of Cholera, of which 4 were fatal; after the following day (September 29) no more than 3 of Choleraic Diarrhœa, and 1 of Cholera, (none being fatal), were reported during the rest of the Epidemic.

Whatever opinions there may be concerning the effect of Water generally in the production of Cholera, we cannot reasonably doubt the immediate connection between the Water and the existence of the Disease, nor question the cause of its cessation in this particular instance. The precise way in which the Water acts in the production of the Disease will be considered hereafter.

The Water was deficient in quantity, and bad in quality, in many of the wells*, and especially in some of the affected yards; and the water supplied by the Water-works was Water from the river whose condition has been described at page 24: in the Map are seen also the principal, but by no means all the points where the Water was fouled by the sewage of the Town, before it was distributed over it †.

* Inquiries have been made of 123 houses or alleys, in which Cholera occurred, concerning their Water Supply. Of these, in 68 instances no complaint was made of the Well Water: in 26 it was said to be insufficient: in 14 to be bad. In all instances (10) where the City Water Works were depended upon, it was said to be too bad to be used: in 3 the same report was made of Wells; and in these 13 cases the inhabitants went elsewhere for their supply.

† Happily New Water-works are now constructed; still below the Town, but from a large sheet of water, not from the River. March 1856.

CHAPTER IV.

Comparative Meteorological results during the Visitations of Cholera in Oxford in 1832, 1849, 1854, *from observations made at the Radcliffe Observatory.*

For the important Meteorological Observations which follow, I am indebted to the kindness of Mr. Johnson, the able and indefatigable Radcliffe Observer.

"In the following Tables I have collected together and presented in as concise a form as I have been able, the mean monthly results of such Meteorological observations as have been made at the Radcliffe Observatory during the Visitations of Cholera in 1832, 1849, 1854. In the latter year the system of observation having been somewhat extended, the details are fuller. To have attempted a statement of daily changes during the two earlier visitations, would have led us beyond the reasonable limits of a local Report, and would probably not have been attended with any adequate advantage. With regard to 1854, this has been done in the series of Diagrams at the end of the volume, drawn up by Dr. Acland, to shew the progress of the Disease, of which the meteorological data are derived from the same source as supplied the following results.

Nothing more, I believe, need be said in the way of preface. I shall therefore place the Tables at once before the reader, and then proceed to the explanation of them.

TABLE I.—*Barometer.*

	Normal Reading.	Probable Ann. Var.	Excess in		
			1832.	1849.	1854.
	in.	in.			
Jan.	29·721	± 0·107	+ 0·060	− 0·007	− 0·168
Feb.	·700	·113	+ ·187	+ ·346	+ ·315
Mar.	·690	·118	+ ·019	+ ·184	+ ·431
Apr.	·700	·110	+ ·097	− ·232	+ ·234
May	·733	·085	+ ·002	− ·019	− ·126
June	·725	·059	− ·069	+ ·087	− ·046
July	·721	·047	+ ·160	+ ·009	+ ·028
Aug.	·730	·059	− ·079	+ ·047	+ ·110
Sept.	·718	·084	+ ·195	− ·002	+ ·242
Oct.	·684	·104	+ ·168	− ·001	− ·022
Nov.	·677	·111	− ·027	+ ·010	− ·036
Dec.	·707	·107	+ ·056	+ ·044	+ ·022
Year	29·708	± 0·028	+ 0·075	+ ·040	+ ·080

Table II.—*Thermometers.*

	Dry Bulb.					Wet Bulb.				
	Normal Reading.	Probable Ann. Var.	Excess in 1832.	Excess in 1849.	Excess in 1854.	Normal Reading.	Probable Ann. Var.	Excess in 1832.	Excess in 1849.	Excess in 1854.
	°	°								
Jan.	37·7	± 2·61	− 0·7	+ 1·8	+ 1·6	36·5	± 3·44	..	..	+ 1·6
Feb.	38·6	2·38	− 1·5	+ 3·4	+ 1·4	36·9	2·84	..	..	+ 0·6
Mar.	41·4	2·07	− 0·1	+ 1·2	+ 2·3	38·7	2·09	..	..	+ 2·1
Apr.	46·0	1·79	+ 0·5	− 3·1	+ 2·9	42·6	1·69	..	..	+ 1·7
May	52·4	1·68	− 0·1	+ 1·5	− 1·8	49·0	1·68	..	..	− 1·4
June	58·6	1·56	+ 0·6	− 1·0	− 3·0	55·2	1·68	..	..	− 2·4
July	61·4	1·43	+ 0·1	− 0·9	− 0·4	57·7	1·38	..	..	− 0·7
Aug.	59·7	1·28	+ 0·8	+ 0·9	+ 0·3	55·8	0·94	..	+ 0·6	+ 0·2
Sept.	55·1	1·33	+ 1·0	+ 1·0	+ 2·9	51·6	0·89	..	+ 1·5	+ 2·1
Oct.	49·3	1·65	+ 1·9	0·0	+ 0·4	46·8	1·49	..	0·0	0·0
Nov.	43·5	2·14	0·0	+ 0·2	− 2·2	41·9	2·54	..	+ 0·3	− 2·6
Dec.	39·3	2·50	+ 2·3	− 0·5	+ 2·7	38·0	3·36	..	+ 0·6	+ 1·6
Year	48·6	± 0·60	+ 0·4	+ 0·4	+ 0·6	45·9	± 0·66	..	..	+ 0·2

Table III.—*Hygrometrical Deductions.*

	Dew Point.				Pressure of Vapour.			
	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.
	°	°	°	°	in.	in.	in.	in.
Jan.	34·7	..	..	+ 1·8	0·220	..	..	+ ·021
Feb.	34·5	..	..	− 0·2	·217	..	..	− ·005
Mar.	35·4	..	..	+ 2·0	·226	..	..	+ ·020
Apr.	38·9	..	..	+ 0·1	·254	..	..	+ ·011
May	45·6	..	..	− 0·7	·322	..	..	− ·011
June	52·8	..	..	− 1·8	·411	..	..	− ·027
July	55·1	..	..	− 0·6	·445	..	..	− ·004
Aug.	53·1	..	+ 0·4	+ 0·7	·415	..	+ ·006	+ ·002
Sept.	49·1	..	+ 1·9	+ 1·4	·363	..	+ ·023	+ ·019
Oct.	44·2	..	0·0	− 0·4	·306	..	·000	+ ·003
Nov.	40·0	..	+ 0·2	− 3·2	·264	..	+ ·002	− ·028
Dec.	36·2	..	+ 2·1	+ 0·7	·232	..	+ ·017	+ ·008

	Degree of Humidity. Saturation = 1·0.				Weight of a cubic foot of Air.			
	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.
					grs.	grs.	grs.	grs.
Jan.	0·902	..	..	+ ·005	550	..	..	− 5
Feb.	·864	..	..	− ·045	548	..	..	+ 5
Mar.	·815	..	..	− ·010	545	..	..	+ 5
Apr.	·780	..	..	− ·068	540	..	..	+ 1
May	·782	..	..	+ ·038	532	..	..	+ 1
June	·824	..	..	+ ·037	526	..	..	+ 3
July	·811	..	..	− ·005	523	..	..	+ 1
Aug.	·796	..	− ·009	− ·004	525	..	0	+ 1
Sept.	·818	..	− ·026	− ·039	530	..	− 1	+ 1
Oct.	·839	..	·000	− ·020	536	..	0	− 1
Nov.	·896	..	− ·010	− ·042	542	..	0	+ 2
Dec.	·899	..	+ ·085	− ·059	548	..	+ 1	− 3

TABLE IV.—*Mean daily range of Thermometer.*

	Normal Value.	Probable Variation.	Excess in 1832.	Excess in 1849.	Excess in 1854.
Jan.	9·7	±1·01	− 0·8	..	− 0·3
Feb.	11.8	1·57	− 1·7	..	+ 1·4
Mar.	15·3	1·97	− 1·6	..	+ 0·9
Apr.	18·1	1·87	− 1·7	..	+ 2·6
May	18·2	1·53	− 1.3	..	+ 0·7
June	17·0	1·31	− 0·5	..	− 1·0
July	16·7	1·37	+ 1·1	..	+ 1·5
Aug.	17·4	1·53	− 0·1	..	+ 1·0
Sept.	16·7	1·45	+ 2·4	..	+ 4·6
Oct.	14·0	1·07	− 2·2	..	+ 1·0
Nov.	11·1	0·65	− 1·0	..	+ 0·1
Dec.	9·6	0·59	− 0·2	..	+ 1·4
Year.	14·6	±0·40	− 0·6	..	+ 1·2

TABLE V.—*Quantity of Rain and other Fall.*

	Normal Value.	Probable Variation.	Excess in 1832.	Excess in 1849.	Excess in 1854.
Jan.	1·99	±·783	− 0·39	− 0·31	+ 0·16
Feb.	1·83	·695	− 1·43	− 0·95	− 0·94
Mar.	1·81	·672	+ 0·28	− 0·18	− 1·40
April	1·94	·725	+ 0·56	+ 1·52	− 1·16
May	2·17	·809	+ 0·72	+ 1·41	+ 1·07
June	2·34	·935	+ 0·63	− 1·19	− 0·53
July	2·51	·919	− 0·96	− 0·20	− 1·04
Aug.	2·63	·944	+ 1·90	− 1·48	− 0·92
Sept.	2·67	·964	− 1·64	+ 0·79	− 2·23
Oct.	2·63	·975	+ 0·71	− 0·99	− 0·36
Nov.	2·47	·953	+ 0·61	− 0·99	− 1·19
Dec.	2·23	·884	− 0·24	+ 0·43	− 1·03
Year.	27·22	±3·09	+ 0·75	−2·14	− 9·57

TABLE VI.—*Direction of the Wind.*

	Normal Direction.	Direction in 1832.	Northerly excess in 1832.	Direction in 1849.	Northerly excess in 1849.	Direction in 1854.	Northerly excess in 1854.
Jan.	S 50° W	S 26° W	− 24°	S 44° W	− 6°	S 31° W	− 19°
Feb.	S 62 W	S 60 W	− 2	S 48 W	14	N 52 W	+ 66
Mar.	S 79 W	S 75 W	− 4	S 89 W	+ 10	S 88 W	+ 9
April	N 18 W	S 47 W	−115	S 33 W	−129	N 9 E	+ 27
May	N 21 W	N 8 W	+ 13	N 44 W	− 23	N 82 W	− 61
June	S 64 W	N 80 W	+ 36	N 9 W	+107	N 71 W	+ 45
July	S 68 W	N 39 W	+ 73	S 62 W	− 6	S 83 W	+ 15
Aug.	S 67 W	S 45 W	− 22	S 60 W	− 7	N 75 W	+ 38
Sept.	S 61 W	N 86 W	+ 33	S 74 E	−135	S 65 W	+ 4
Oct.	S 59 W	S 35 W	− 24	S 27 W	− 32	N 85 W	+ 36
Nov.	S 42 W	S 54 W	− 96	S 23 W	− 19	N 58 W	+ 80
Dec.	S 47 W	S 55 W	+ 8	N 11 W	+122	N 89 W	+ 44
Year.	S 61 W	S 61 W	0	S 56 W	− 5	N 80 W	+ 39

TABLE VII.—*Proportion of Northerly to Southerly, and of Easterly to Westerly Winds, Northerly and Easterly Winds being assumed* = 1.

	Normal Ratio.	Ratio in 1832.	Proport. excess in 1832.	Ratio in 1849.	Proport. excess in 1849.	Ratio in 1854.	Proport. excess in 1854.
North to South.							
Jan.	1·42	2·57	1·81	2·50	1·76	4·00	2·82
Feb.	1·60	1·27	0·79	7·33	4·58	0·19	0·12
Mar.	1·04	1·40	1·35	1·08	1·04	1·13	1·09
April	0·83	2·25	2·71	1·27	1·53	0·31	0·37
May	0·81	0·59	0·73	0·80	0·99	1·50	1·86
June	1·55	0·92	0·59	0·56	0·36	0·74	0·48
July	1·74	0·41	0·24	1·78	1·02	1·13	0·65
Aug.	1·75	3·67	2·10	2·67	1·53	0·65	0·37
Sept.	1·26	1·00	0·79	1·18	0·94	1·47	1·17
Oct.	1·75	3·67	2·10	1·40	0·80	0·96	0·55
Nov.	1·95	1·50	0·77	3·00	1·54	0·38	0·19
Dec.	1·77	2·83	1·60	0·67	0·38	1·00	0·56
Year.	1·40	1·34	0·96	1·39	0·99	0·81	0·58
East to West.							
	Normal Ratio.	Ratio in 1832.	Proport. excess in 1832.	Ratio in 1849.	Proport. excess in 1849.	Ratio in 1854.	Proport. excess in 1854.
Jan.	1·49	1·60	1·07	3·00	2·01	1·70	1·11
Feb.	2·27	1·15	0·50	30·00	13·15	3·90	1·71
Mar.	1·56	3·00	1·93	1·67	1·07	2·55	1·63
April	1·02	2·43	2·38	1·15	1·13	0·83	0·81
May	1·06	1·00	0·94	1·27	1·20	36·00	33·96
June	2·34	2·33	1·00	1·00	0·43	6·20	2·65
July	3·12	1·88	0·60	2·86	0·92	3·10	0·99
Aug.	3·05	5·00	1·64	5·50	1·80	14·67	4·81
Sept.	1·68	2·14	1·27	0·40	0·24	3·00	1·79
Oct.	2·42	3·00	1·24	1·30	0·54	6·00	2·48
Nov.	1·93	0·56	0·29	1·67	0·87	16·00	8·28
Dec.	1·92	4·00	2·08	1·22	0·64	inf.	inf.
Year.	1·86	1·66	0·89	1·71	0·92	4·37	2·35

TABLE VIII.

	Relative Force of Wind.		Amount of Cloud.		Schönbein's Ozonometer.	
	Normal Value.	Excess in 1854.	Normal Value.	Excess in 1854.	10 A.M.	10 P.M.
Jan.	2·0	− 0·5	7·5	+ 0·4	..	..
Feb.	2·1	− 0·6	6·9	+ 0·9	2·7	2·0
Mar.	1·7	− 0·4	6·8	− 0·7	3·1	1·9
April	2·0	− 0·5	6·9	− 2·4	3·8	2·3
May	1·7	− 0·6	6·9	0·0	4·7	2·3
June	1·9	− 0·2	7·2	+ 0·8	5·0	3·4
July	1·8	− 0·6	7·5	+ 0·4	3·2	2·0
Aug.	1·8	− 0·4	6·9	− 0·5	2·6	1·5
Sept.	1·7	− 0·2	6·0	− 1·7	2·9	1·9
Oct.	1·9	− 0·3	7·3	− 0·4	2·6	1·7
Nov.	1·8	− 0·2	7·1	+ 0·6	3·0	2·8
Dec.	1·7	+ 0·5	7·7	− 1·0	3·6	2·4
Year.	1·8	− 0·3	7·1	− 0·3	3·4	2·0

Explanation of the Meteorological Tables.

Table I.—The second column contains the most probable mean monthly reading of the Barometer deduced from 25 years' observations, from 1828 to 1852 inclusive.

The column entitled "Probable Annual Variation" shews the amount of variation to which the values in the preceding column are liable, according to the theory of probabilities. The numbers here given represent the limits within which it is an even chance that the mean monthly indications in any year will agree with the Normal values. They serve therefore as standards to mark the meteorological character of any given month; excesses falling within these limits shewing that the condition was not abnormal, while greater excesses shew that it was.

In the three following columns are given the excesses during every month of the years in which Cholera appeared. In these columns the sign + shews that the atmospheric pressure of the year was greater than the normal pressure, and the sign —, the contrary. Therefore by adding the quantities with the + sign to, and subtracting those with the — sign from, the normal values, we obtain the reading of the barometer for any required month.

Thus a comparison of these numbers with the *probable variation* will shew whether there was any thing extraordinary in the character of the month. For example, we see in the year 1832, that the excess in January was less than the probable variation, therefore that month was not abnormal in the condition of pressure; whereas February was. The same was the case in 1849; while in 1854 both months were abnormal.

Furthermore, knowing the probable variation of any period and its observed excess, we are in a condition to estimate, by the law of probabilities, the degree of abnormality. Thus, such an excess as occurred in February 1832, will probably occur once in every four years; whereas so great a difference as occurred in February 1849, is not likely to occur more than once every 25 years, and the excess in March 1854 was such as is not likely to happen more than once in 70 years.

From these columns of excesses it will be seen that in all the years of Cholera the mean pressure of the atmosphere was greater than the normal pressure.

The excess in 1832 is likely to recur once in 14 years.
.. .. 1849 .. .. once in 4 years.
.. .. 1854 .. .. once in 18 years.

It must be understood that we are not asserting that the standard is unerring; but I believe, under the circumstances, it is as convenient and as sure a test as any we can adopt, and has the advantage of conveying a more definite idea of climatic anomalies than a mere statement of comparative agreement with an average; which is a factitious quantity, dependent entirely for its value, as a

standard, on the elements from which it is composed. For example, take these two series of numbers.

29·75	29·55
29·35	29·45
29·17	29·43
29·99	29·50
29·04	29·40
Mean 29·46	Mean 29·46

The means of both series agree. Now take the differences between each individual result, and the mean, disregarding signs, and we have—

0·35	0·09
11	01
29	03
53	04
42	06
Mean 0·340	Mean 0·046

Here then, obviously, a deviation of 0·10 would be a small quantity relatively to the first series, and a large one relatively to the second. But we could not judge of this without knowing the average differences which obtain between the numbers composing the averages themselves.

I have perhaps dwelt too long on this subject, but it appears to me an important one in Comparative Meteorology; and as I have adopted the same system in all the following Tables, wherever I had materials for a tolerably accurate determination, what I have here said will be applicable to them also.

Table II. contains the comparisons of the mean monthly temperatures of the three years with the normal values. The arrangement is the same as that of Table I.

The year 1832 is distinguished by extreme regularity of temperature. Only one month, October, was abnormal, and that very slightly. In 1848 the months of February and April were abnormal, the former in excess, the latter in defect, as 3 to 1 and 4 to 1 respectively; that is to say, such differences are likely to occur every third and fourth year.

The year 1854 presents greater irregularities. Six out of the twelve months were slightly abnormal; the low temperature of June, and the high temperature of September are chiefly noticeable; the former in the proportion of 5 to 1, the latter of 6 to 1.

The mean temperatures of all three years were normal.

Table III. contains the Hygrometric results deduced from the preceding values of the Dry and Wet Bulb Thermometers, by Glaisher's Tables.

The observations have not extended over a sufficient number of years to enable us to establish satisfactorily the probable variation of these elements. However, the deficiency of humidity, and the excess in the weight of air, in the year 1854, are noticeable.

Table IV. contains the comparison of the normal daily range of temperature in each month, with the daily range in 1832 and 1854; no observations of the kind having been made in 1849. In this Table we may remark great comparative steadiness of temperature in 1832, and the contrary in 1854. In 1832, in three months only was the range *greater* than the normal range; whereas in 1854 there were only three when it was *less*. The greatest excess is in September 1854, which was abnormal in the proportion 35 to 1. The same month in 1832 was also abnormal, but only in the proportion of $4\frac{1}{2}$ to 1. The range of the year was in both cases abnormal; in 1832, the proportion being as $3\frac{1}{4}$ to 1; in 1854 as 25 to 1.

Table V. gives a comparative view of the fall of rain during the periods under consideration. It is in this particular that we differ most from the values given by Mr. Glaisher, in his elaborate Report on the Meteorology of the Metropolis. In all that we have hitherto examined, our results are very similar to those at which he has arrived.

In the neighbourhood of London there was a deficiency of 7 inches in 1832; here there was an excess of $\frac{3}{4}$ of an inch. In 1849 the deficiency near London was $\frac{6}{10}$ths of an inch; here it was 2·14 inches. In 1854 the annual deficiency about London was 5.93 inches; here it was 9.57 inches; a deviation, from the normal value, not likely to occur more than once in 27 years.

In Table VI. is given the average monthly direction of the wind, found and recorded according to a method known as Lambert's method. The normal direction is the result of 25 years observations.

The columns entitled Northerly excess, show the deviation, greater or less, of the monthly from the normal mean. Reckoning in the direction N, E, S, W; when the monthly deviation is towards N, according to this progression, the + sign is prefixed; if farther from N, the − sign is used. Thus in July 1832, the monthly direction is N 39° W, that is, 51° from W towards N, whereas the normal direction is S 68 W, that is, 22° from W toward S, therefore the monthly deviation is $51° + 22° = 73°$ more N than the normal direction; consequently the sign + is prefixed.

Again, in Nov. 1832 the normal direction is S 42 W, that is, 42° from S towards W; the monthly direction is S 54 E, that is, 54° from S towards E; therefore the deviation of the month is $42 + 54 = 96°$; but as in the order of progression W approaches N nearer than E, the deviation is distinguished by the − sign.

During the severest period of the Visitation in 1832, it will be perceived that the

wind had a decided bias towards the NW. The same also was perceptible in a still greater degree in 1854; but not so in 1849.

The mean annual direction in 1832 and 1849 agrees nearly with the normal direction. In 1854 however the annual deviation is as much as 39° towards the N.

Table VII. gives the relative amount of Southerly to Northerly, and of Westerly to Easterly winds, assuming the amount of Northerly and Easterly winds=1.

The construction of this Table is as follows. The days on which the wind blew NW, N, NE, are reckoned N;—NE, E, SE, are reckoned E;—SE, S, SW, are reckoned S; and SW, W, NW, are reckoned W.

The numbers given in the columns of ratios, in the first half of the Table, are the number of days of S divided by the number of days of N; and in the second half, the number of days of W divided by E. The normal ratio was deduced from 25 years' observation.

The columns entitled "Proportionate excess" give the ratios which the monthly values bear to the normal values. For example, in January 1832 there was 2.57 times more S wind than N; the normal excess is only 1.42 times; divide 2.57 by 1.42, and we have 1.81 nearly. Therefore there was 1.81 times more S wind than usual in that month. When the "proportionate excess" is less than 1, it shews of course that there was less S or W wind than usual.

This Table shews that in each of the three years there was a deficiency of S wind; and in 1832 and 1849 a deficiency also of W; but in 1854 there was the large excess of 4.37 in favour of W. In December of that year there was no E wind, therefore of course the ratio is infinite.

Table VIII. contains the relative force of wind, the amount of cloud, and the indications of Schönbein's Ozonometer taken twice a day, at 10 in the morning and 10 at night.

The two former elements are mere naked eye estimates, and claim only a certain amount of *relative* accuracy.

For the wind, our notation is from 0 to 6; 0 representing a calm, and 6 the heaviest storm. The normal values are the mean of 5 years' observation. Comparing the numbers in the column of excess in 1854, it will be perceived that they are all effected with the − sign, shewing that there was a deficiency of wind in that year.

In the plate shewing the progress of the disease in 1854, the value of one unit of our notation has been assumed equal to 60 miles of the Greenwich Anemometer, this being the result of several comparisons with the indications of that instrument.

Our Cloud notation is from 0−10, the former figure representing a clear, and the latter an overcast sky. Here again the normal value is the mean of five years

observations. The column of excess, generally, exhibits nearly an equal division of + and − signs, but it will be perceived that the three months of Cholera were less cloudy than usual.

Observations with Schönbein's Ozonometer were commenced during the last days of January 1854. Some few early experiments have been rejected, and our Table begins with February. The observation, as is known, consists in observing the action of the atmosphere on a piece of prepared paper; whether after exposure to the air, the paper on being dipped into clean water exhibits any tint of purple, such as is shewn on a scale with which the observer is provided. The deepest tint is marked 10, and 0 indicates that no perceptible effect has taken place. Our practice has been to expose a slip of paper at 10 in the morning and to examine it at 10 at night, when another slip is exposed, which is examined at 10 the next morning. It will be perceived that in every case the paper exposed during the night was most affected. I draw attention to this circumstance without knowing whether it is usual, for I have no series of experiments at hand, made in other places. Care was taken, according to the precept given with the papers, to expose them as much as possible to the air, and at the same time to protect them from sunlight and rain.

The numbers in the Table are monthly means, and consequently made up of all grades of tints. On account of the novelty of the experiment, it may be interesting to mention the days on which the deepest tints (9 and 10 of the scale) occurred.

These were—

February 1. 6. 17. 24.
March 4*. 5. 8*.
April 12. 17. 22[b].
May 3. 7. 16. 21. 28. 29.
June 2. 10.
July .. .. ..
August .. ..
September 20[b].
October 7. 8. 17*. 22.
November 18[b]. 26.
December 3*. 14. 22. 25. 27.

On the days marked with a *, the indication occurred between 10 A.M. and 10 P.M.; on those marked with [b], both observations were affected; in the remaining cases the indication occurred at 10 A.M., after the paper had been exposed all night.

They occurred

6	times, when the wind was	N.
6	.. ..	NE.
2	.. ..	E.
1	.. ..	SE.
0	.. ..	S.
7	.. ..	SW.
9	.. ..	W.
2	.. ..	NW.

It only remains to examine the characteristics of the three years under consideration, in relation to occasional phænomena, such as snow, hail, thunder and lightning, and Aurora Borealis.

In 25 years, from 1828—52, I find recorded 253 days of snow, which gives an average of 10 days a year, nearly. The greatest number occurs in 1838, when it amounted to 24; the least in 1834, when it fell only on one day.

In 1832	the number of days was	3.
1849	.. ..	9.
1854	.. ..	8.

The number of days of Hail during the same 25 years was 94, giving an average of rather less than 4 days a year. The highest extreme was 8 in 1851.

In 1832	the number of days was	0.
1849	.. ..	7.
1854	.. ..	12.

The number of Thunder-storms during the same period was 88; giving an average of 3.5 a year. There is none recorded in 1829; 7 occurred in 1852. These are the extremes.

In 1832	the number was	1.
1849	.. ..	4.
1854	.. ..	8.

The number of days, during the same period, when Thunder was heard unaccompanied by Lightning, was 90, giving an average of 3.5 a year. No occurrence of the kind took place in 1829, 1833, 1838, or 1840. In 1835 and 1846, it happened 8 times.

In 1832	it happened	2 times.
1849	.. ..	8 ..
1854	.. ..	4 ..

The appearances of Lightning without Thunder do not seem to have been noted before 1840. From that time to 1852 the phænomenon has occurred 47 times; again giving an average of 3.5 a year. It was not observed in 1840, 1842, or 1848; in 1852 it was observed 13 times.

In 1849	the number of occurrences was ..	6.
1854	.. ..	8.

The number of recorded appearances of Aurora Borealis from 1828—1852 is 28. The greatest number having been seen in 1852, when it amounted to 6.

In 1832	the number was	0.
1849	.. ..	2.
1854	.. ..	9.

The subjoined Table presents at one view the principal results of the preceding inquiry.

TABLE IX.

	Atmosph. Pressure.	Mean Temperat.	Range of Temperat.	Amount of Rain.	Direction of Wind.	Force of Wind.	Days of Hail.	Thunder & Lightning.	Aurora Borealis.
1832.	Abn. +	Norm. +	Abn. −	Norm. +	Norm.	?	Abn. −	Abn. −	Abn. −
1849.	Abn. +	Norm. +	?	Norm. −	Norm.	?	Abn. +	Norm.	Norm.
1854.	Abn. +	Norm. +	Abn. +	Abn. −	Abn.	Abn. −	Abn. +	Abn. +	Abn. +

On comparing the details of this Table the reader will not fail to remark how few similar features the three years present. In fact, the abnormal excess of atmospheric pressure and the normal excess of mean temperature, are the only conditions common to them all. The years 1832 and 1854 are both very abnormal, but in every other respect except those just mentioned, in *opposite directions*. Hence we might be led to infer, that meteorological excesses in either direction are equally favourable to the developement of the disease. But then how are we to account for its appearance in 1849, which viewed altogether, is by no means an abnormal year?

There is however one point which the Table brings out very strongly, that is, the extraordinary character of 1854. Except in the solitary condition of mean temperature, every thing is abnormal. Excessive in atmospheric pressure, and daily variations of temperature, deficient in rain and wind, abnormal in the direction of wind, excessive in the display of electrical phænomena,—as if to complete a meteorological paradox, this same year, remarkable for the abundance of its harvest, was not less remarkable for pestilence and its consequent mortality."

The relations between the Atmosphere and the Disease.

It remains for me only to connect the Meteorological facts, philosophically set forth by Mr. Johnson, with what I have been able to collect of the relation of these facts to the progress of the Disease. That there is a connection between the state of the Atmosphere, or of the imponderable agents of the globe, and the existence of the Epidemic, is scarcely doubted by those who have carefully attended to its history; and the Observations of Mr. Johnson, and those of Mr. Glaisher, confirm this view. I shall hereafter express my own hypothesis as to the part which it plays. What is the precise nature of the connection these skilful Observers do not pretend as yet to decide. Mr. Glaisher indeed states that he can *by eye* detect differences in Mist, which he connects with various forms of disease. And various in-

stances are recorded of the real or supposed existence of a "Cholera smell" in the air before its approach. Admitting these subtle discriminations of the human sense, we must confess that the matter on which they are exercised has not been determined by science. Both Mr. Johnson's Observations here in Oxford, and Mr. Glaisher's labours in the Metropolis, show the year 1854 to be abnormal. As Mr. Johnson has stated, 1832 and 1854 were both abnormal, but in different directions, as though a merely abnormal meteorological condition were sufficient to cause the pestilence. It may be confidently expected that the rapidly advancing science of Meteorology will, if another Epidemic be appointed to visit us, make clear which of the abnormal conditions are the essentials; for the accurate observations of *several* Cholera localities during another Epidemic will tend of course to prove which of the abnormities are universally present.

The reader, on looking at the Diagram placed at the end of the volume, will notice that in Oxford there were three distinct periods of increase in the number of Cholera cases. The first from September 5 to September 13; the second from September 13 to September 28; and the third from September 28 to October 8. The Diarrhœa recorded followed nearly the same rule, as did also the Choleraic Diarrhœa. It would needlessly detain the reader if I were to enumerate in words the numbers which he can see more graphically presented to him in the Diagram; but his attention should be directed to some coincident phænomena expressed by the sheet before him. 1st, it is truly interesting to see the way in which the general curves of the Diarrhœa, Choleraic Diarrhœa, and Cholera, followed each other; suggesting, as far as one locality may suggest a theory, that there is some common agent concerned more or less in producing all three forms of disease. He should especially notice, for instance, how on September 18th, when there was a great rise in the Diarrhœa cases, viz. from 178 new cases to 226, this rise was coincident with the highest number of Cholera Cases in the second group, and with all but the highest of the Choleraic Diarrhœa; though this is not *always* the case. On the 22nd the Diarrhœa Cases fell when the Cholera rose, *but the Choleraic Diarrhœa* was that day at its maximum; it seems as though the cause, whatever it be, which produced Diarrhœa and Choleraic Diarrhœa, acted on that day rather with intensity on individuals, than extensively on the population. Again, the Diarrhœa fell from 118 new Cases, reported on the 27th, to 68 on the 28th; on this last day there was *no* new Case of Cholera. The Diarrhœa rose again to 115 new Cases on the 2nd of October, and the Cholera cases rose again to 9 new Cases.

Were any Meteorological conditions noticed at the Observatory, as always accompanying these periods of fluctuation in the Disease?

Ozone *.

Now, first of all, between the 27th of August and the 16th of October, which may be called the limits of the mass of the Disease, excluding a few outlying cases at the beginning and the end, there were, as has been just said, three periods of increase, and of course two intervening periods of diminution. Exactly the same thing happened with the Ozone and at the same period; with this difference only, that whereas the greatest amount indicated by the Ozonometer in the first period coincided with the worst Cholera day, in the two subsequent periods the maximum of Ozone followed the maximum of Cholera. Of these facts, assuming a connection between them, there may be two explanations, either that the rise of the Ozone caused the rise of the Cholera (the first group), or that the rise of the Ozone preceded or caused the subsequent period of Cholera disease. This last view is scarcely applicable to the second and third group, for, as I have said, the maximum of Ozone appeared while the Cholera was on the decrease. It need hardly be said that one such coincidence is insufficient to establish a connection, still less to shew its nature, whereas, on the other hand, it is quite impossible that the observer should not be struck with the fact of the coincidence of these four masses of Diarrhœa, Choleraic Diarrhœa, Cholera, and Ozone. It may as well be added here once for all, that in the collection of the statistics of these cases of Disease, the Medical practitioners were wholly unaware of the nature of each other's returns, and that therefore, although the returns themselves may not represent with absolute accuracy the precise number of Cases that occurred, it is most likely that any errors, which may exist, mutually counterbalance each other, and that the curves really represent the actual course of the Disease.

Thermometer.

On the 8th of September, the centre of the first period of increase, the Temperature fell, and there was far less difference between the maximum and minimum of the Thermometer than on any previous day for a week. From that day to the 13th the maximum rose again, the Cholera diminishing; but on the 18th, the centre of the next period of increase, it had again fallen. On that day, however, there was greater variation between the extremes of Temperature than on the two preceding days. The maximum of the Thermometer was on the increase on the day of cessation of the second Cholera period, but then the minimum the day before had been lower than on any day for three months. At the maximum of the third period the Thermometer was falling, and at the termination of this epoch it was again rising. So that we cannot predicate any one Thermometric condition as common to these three periods.

* The Contour lines on the Map will show that the Observatory, where Ozone observations were made, is one of the highest parts of Oxford.

Rain, Cloud, and Moisture.

The weather was unusually fine, dry, and clear. In the first Cholera period and the third the sky was comparatively free from cloud, on the day preceding and following the lull in the Disease. After the second period there was no cloud, but at the next great lull, as in the centre of the second or middle period of increase, the sky was all but wholly overcast. Upon looking at the line formed by the degrees of moisture in the air, it will be seen that on the days preceding the two first Cholera periods the air had been becoming more dry, and, preceding the last period, more fully saturated. No rain fell on the maximum days of the two first Cholera periods, or on the day of material decline of the Disease, September 27. But a little fell on the maximum day of the third period, and on the minimum day which followed it.

Wind.

Contrary to the opinion which has been gaining ground on apparently sufficient data, we do not find that a general stagnation in the air is a necessary accompaniment of the Epidemic. For although on the central day of the last period of increase there was scarcely any movement of the atmosphere around Oxford, it was blowing fresh during the central period, (so fresh as to blow down the tents in the Field of Observation,) as it did also during the decline of the Disease. And the direction was by no means uniform. It was mainly northerly previous to the first period, south-west previous to the second, and northerly again previous to the third.

Barometer.

During the first and third Cholera periods the Barometer was steadily falling, and continued to fall for some days afterwards. During the main central period it was steadily rising, and continued upon the whole to rise, excepting on one day of storm, September 24, until the day before that of the great lull in the Disease, September 28, when it was falling, as it continued to fall chiefly during the height of the last period. It rose again and fell an inch, in the fortnight during which the Pestilence died out.

In concluding this comparison between the course of the Epidemic and the condition of the Atmosphere, we may in few words bring our statements into relation with those of the Scientific Committee of the General Board of Health.

The reading of the Barometer here, as in London, is shewn by Mr. Johnson to have been unusually high, as was the mean temperature, it being remarked by Mr. Johnson that these two conditions were common to our three Cholera Epidemics, and the only conditions, he states, that *were* so. With us, as in London, the *range* of Temperature was, this year, during a part, but not during the whole, of the Cholera period, less than usual. Of fog, mist, and haze, we here observed, I believe, less

than is frequent with us. If we had during the Cholera period two periods of calm, we had one period, and that the centre of the Epidemic, of very considerable movement. In fact, the horizontal movement of the one or two periods before and after the centre of the Epidemic exceeded that of any day in the previous ten weeks. And lastly, especial attention must be called to the fact, that with us there was a greater amount of Ozone shown on some days than on any previous day for eight weeks, and that the total value of Mr. Johnson's Ozone notation in the central week of the Cholera, September 17 to 24, amounted to nearly 37, and in no other week, for ten weeks, to 25.

It is impossible to close this subject without the expression of a hope and firm expectation, that in some future Epidemic such observations may be made in most of the affected towns, as may lead to the realization of Mr. Glaisher's anticipation, quoted in the Scientific Report, that we may be in a condition "to elaborate a clear insight into the Meteorological causes" of disease. This consummation is to be attained in no way but by the hearty cooperation of many persons for a common good, such as that which has now most kindly been given to me by Mr. Johnson.

CHAPTER V.

Treatment of the Disease in Oxford.

From the experience which I had had in the Epidemic of 1849, and also from the knowledge that the Metropolitan Board of Health had undertaken, through a Medical Council of able persons carefully selected, to make a searching inquiry into the statistics of the Disease as it showed itself in London; and also from the fact already adverted to, that the Epidemic was at its height before any adequate arrangements were made, I decided, at the time of my appointment, that no practical advantage, commensurate with the labour that would be caused, could be gained by an endeavour to obtain from the Practitioners of Oxford a detailed history of each individual case. But I thought it due to those Gentlemen, and also to the District to which they rendered their services, to request them at the time to favour me with a summary of their opinions and experience during the course of the Disease.

The two following Questions were submitted to all who were engaged by the Oxford Board of Health.

I. What treatment do you believe to have been the best for ordinary Diarrhœa? Was there any treatment that seemed to you to fail on this occasion, which you had believed to be efficacious?

In answer to this question, ten Gentlemen have kindly detailed their plan of treatment. Of these all but one employed Opium with success. It was used in combination with Chalk by five; with Sulphuric Acid by three; with Astringents, such as Kino and Catechu, by two; with Calomel by two; and with Grey Powder by two.

Dilute Sulphuric Acid in Infusion of Roses, with or without Sulphuric Æther, was employed by three: the dose of the Sulphuric Acid being in some cases one drachm every hour, or two hours; in others less.

When the above remedies had failed, Opium in a dose of two grains, Acetate of Lead with Opium, Sulphate of Iron, and Sulphate of Copper, have respectively been found successful.

In one poor district Chalk Mixture with Opium is especially remarked to have been inefficacious: and, in this district, both the Medical men employed notice the success of the treatment by Sulphuric Acid.

Rest in bed, restriction to pure water, iced water, or weak brandy and water, are especially noticed as signally beneficial.

II. What treatment do you believe to have been best for Choleraic Diarrhœa?

In the treatment of the severe or Choleraic Diarrhœa, I find that of nine who have favoured the Board with an account of their method, seven employed Calomel. The remaining two relied upon, and were satisfied with, the effect of Sulphuric Acid. The Calomel was employed with Opium by six out of the seven: and both together simultaneously with Sulphuric Acid by four.

With regard to the mode of administration of Calomel, the following facts should be recorded.

In the County Gaol and elsewhere Mr. Wood found that eight, twelve, or fifteen grains of Calomel, with one or two grains of Opium, followed by Sulphuric Acid and Opium in frequently repeated doses, answered exceedingly well.

Mr. Hitchings's Commentary on this medicine should be given in full.—

"Calomel seemed to have a magical effect when given alone. In several cases in which purging was so continuous as to pass involuntarily into the bed, I found ordinary treatment useless, and in such cases trusted to Calomel alone, and to it I attribute the comparatively few cases of fully developed Cholera which occurred in my practice, taking into consideration the very large amount of Diarrhœa which came under my notice. In Gas Street there were but few houses in which I had not cases of Diarrhœa, not *single* cases, but every member of the family. I am sure I speak within bounds, when I say, that in that street alone I attended at least 100 individuals with Diarrhœa; and from my weekly return it appeared that I attended on an average 200 fresh cases per week, making during the prevalence of the disease about 1500 cases of Diarrhœa, while of confirmed Cholera I had only 45."

Sulphuric Acid, either alone or with Infusion of Roses, was largely used in a bad district with evident advantage; and in the general practice of another person, among all classes of society "it answered admirably," with or without Æther and Opium.

One practical remark of Mr. FREEBORN'S, which would probably be confirmed by the experience of others, should be given.—

"In cases where the cramps have been very severe, the skin cold, and the pulse small, feeble, and flagging, local applications of Mustard or Turpentine, or careful and well-continued Friction, with or without a Liniment of Chloroform, have seemed to do great good. I believe that in several of the cases under my care, the patients were on the point of falling into Collapse, but were rescued by well-applied Friction, which was fairly continued until reaction and warmth were established. At the same time Sulphuric Acid was administered in drachm doses every fifteen or twenty minutes."

Now this summary does not record the result of my own observation; and feeling sincerely grateful to my coadjutors, it seems but right that I should subjoin this in the form of commentary. In the first place, then, I must own that my opinion concerning the then state of our knowledge of the treatment of fully developed Cholera amounts to this, that there was no certain evidence that any drugs were of sure avail, and that it was only certain that rest, warmth, good nursing, and cold water, were essential, or all but essential, to any treatment whatsoever. And I further thought that great harm accrues to the character of Sound and Comprehensive Statistics, that engine of medical science which, next to accurate observation and a correct nomenclature, is the most valuable of all, by allowing deductions to be made and to pass current from data wholly inadequate. Of this I will give now a striking example. It had been impressed on my mind in the Epidemic of 1849, that, after all, it was probable that some kind of astringents would be found to be the true remedy in all stages previous to collapse, and I imagined that perhaps the best vehicle for these astringents would be some form of oleaginous demulcent. The day that I returned from abroad, Dr. Johnson's letter concerning the use of Castor Oil appeared in the Times. The statements as he furnished them gave but one conclusion, that no so valuable remedy had been before discovered, and statements from that amiable and accomplished physician were worthy of the fullest attention. I must say, however, that I did not agree in the reason assigned. I believed that it was not the purgative, but the oleaginous character of the remedy that was of service. The first three Cases that I saw in consultation, and my time allowed me to attend Cases in no other way, I recommended the use of the Oil, and it was administered as nearly as may be according to the directions he gave. In the first Case, after

four ounces had been given, the patient seemed better. There was more warmth, less vomiting, and less purging; but I was alarmed at the quantity to be given, and on my own theory gave Olive Oil instead. It was equally clear to me that the substitution was unfortunate. After a few hours the Castor Oil was resumed, and the kind of improvement which he graphically described immediately took place. Several ounces more were taken with no very marked result. The patient neither rallied nor became more collapsed. The two kinds of oil were given alternately, but the patient ultimately died. It so happened that immediately afterwards, with the same zealous practitioner *, two other severe cases were attended by me in the same house. I never saw any cases (excepting intense collapse cases) that promised less favourably. They were both treated in the same way as the last, but both are at this moment perfectly well. My experience therefore of the Castor Oil is, that it is curative at the rate of two cases out of three, a conclusion, at variance with the larger statistics subsequently published by the Medical Council of the Board of Health. Should any one ask, Why, with that experience, I tried it no more? my answer is, that just as it was a duty to try it on the evidence before me, so it was a duty to desist on the data furnished shortly after, when this method of treatment was examined and reported upon by the College of Physicians as decidedly undesirable. I have partly given this instance as thinking it a duty to record the facts; but it must be borne in mind that it is quoted as an example of the fallaciousness of percentages on small data; and the scientific reader will, I am sure, hold me blameless for not attempting to furnish statements on the results of treatment in developed Cholera, but for referring him to the masterly Analyses of the Treatment Committee of the General Board of Health.

The two other forms of Disease of which we have to treat, viz. Diarrhœa and Choleraic Diarrhœa, must not be so summarily dismissed.

In ordinary Epidemic Diarrhœa, I believe with my brother Practitioners here, what is certainly confirmed by the Board of Health, that the proper, the safest, and the most efficient treatment is by Astringents. It must be admitted, however, that no Astringent seems to be uniformly successful in checking the Disease—even, that is, in curable Cases. And, further, I think that it is worthy of inquiry whether the same Astringent is equally efficacious at different periods of the same Epidemics. I am inclined to believe that in Oxford, both in 1849 and in 1854, the Chalk Mixture with Tincture of Catechu and Laudanum was the best at the outset of the Epidemic. But, further on, it was comparatively inefficacious, unless moderate alterative doses of Grey Powder were added—and, at the close of it, the Mercury was not only useless, but injurious—the best treatment being that noticed as the best at the commencement.

* For obvious reasons the name is withheld.

In some cases, which however were comparatively rare, this treatment did not answer; the choice of the remedy was then difficult; but neither will our limits allow a full discussion of the relative value, as I understand it, of the various astringents, nor are my data such as to warrant it. But I must add this: I was so satisfied from what I saw of various cases, that rest in bed was necessary to give the fairest chance of recovery in a severe case of Diarrhœa, that in 1854 I used absolutely to refuse to attend even slight cases, unless the patients promised to go immediately to bed. Of the exceeding importance of this, I entertain no doubt. And I am satisfied, as far as medical evidence allows, that I have seen death accrue in more than one instance, from the neglect of this precaution in cases that otherwise would have done perfectly well. This remark applies both to cases of neglected Diarrhœa, and to cases that have improved under treatment, and have relapsed upon the patient's leaving bed at too early a period.

I am bound also to add, that I have tried the effect of doing nothing in Diarrhœa, beyond using moderate stimulants, as is often the custom on the Continent. I do not say that this is absolutely unsafe, but I cannot advise it. In several cases I saw the Sulphuric Acid employed with the most marked success, in others it utterly failed. But the reader will have noticed above, that in one district the Sulphuric Acid was far more efficacious than the Chalk Mixture, with or without Opium. That was in an exceedingly poor district: the Cases where I saw it fail were those of persons in the upper classes *.

With respect to the Cases of Choleraic Diarrhœa, I saw personally fewer than most of the district Practitioners. Concerning those that I did see, I think two facts worthy of record. First, that without expressing any opinion as to the rationale of the fact, I feel assured that five or ten grains of Calomel, with one or two grains of Opium, followed by Sulphuric Acid, or by a mild Rhubarb draught, with a 'Carminative,' or stimulant, would occasionally act in a manner truly surprising. For instance, a maid-servant in a neighbour's house one forenoon was seized with cramps, constant vomiting, and had very frequent evacuations: the skin was hot; urine was passed; the pulse distinct. I saw her at 2 P. M., and gave at once five grains of Calomel and half a grain of Opium. A similar dose was given in two hours, and at 6 she had a Rhubarb draught with Aromatic Confection. In the evening she was easy, the evacuations ceased, and the next day she was well. Such a case, or several similar cases, prove no more than that the treatment did no harm, and that, I think, such a case absolutely proves. The judgment of the Practitioner who believes Calomel and Opium to be desirable in such a case, must be either accepted or

* I am told by Mr. Palmer of Woodstock, that he has noticed this same fact among the poor of his district. This, if established, is pathologically interesting and suggestive.

rejected at the will of the critic; until such time as ample statistics collected from competent observers either confirm or overthrow the conclusions held by him as probable. In some cases of Choleraic Diarrhœa the Sulphuric Acid wholly failed, both with and without Opium. In the case of one of my own colleagues, when the Choleraic Diarrhœa came on to an alarming extent, it was tried for many hours without any advantage at all. The disease was arrested and his life saved by the Sulphate of Copper with Opium.

These conclusions tally in the main, I am glad to perceive, with those published by the Board of Health. Of the value of the elaborate Reports and the documents published by the Medical Scientific, and by the Medical Council of that Board, I feel that though it were almost impertinent to speak, yet that I could not speak too highly; they have great value in themselves, but they have a higher value in showing what may be expected of Medical statistics, when the State has fairly appreciated what benefit the people may obtain by an efficient organization under a competent Medical Commission. In the midst of all the painful uncertainties, and the crowd of unsolved problems that obscure the view of the reflecting physiologist and physician, it is cheering to look forward, with confidence that the time will come when the applications of combined observation to medicine will establish irrefragably the truth of some propositions, and eliminate others into the region of absurdities. And one other advantage it may be hoped will accompany this—and the School of Natural Science in Oxford will help to bring it about—that the educated and upper classes of society will gradually learn so much of the physiological truths belonging to the extraordinarily complicated histories of organized beings, that they will lend their powerful help to the support of all that aids the establishment of such truths, will endeavour to discountenance all such error, and will learn that great medical truths are no more matters of opinion, of which every man can judge, than the great practical questions that vex the Engineer; or than the great mathematical problems which are attained only by the life-long work of a few.

Concerning the treatment, one word more must be added. No Medical man here, I believe, doubts the great danger of neglecting Diarrhœa, the facility with which it is checked in far the majority of cases, by the methods lately named, and its exceeding tenacity when it has continued for some hours or days. No one therefore doubts either the great importance of an efficient division of Cholera localities into districts most conveniently situated for each Medical Practitioner employed, the establishment of house to house visitation, or of open Dispensaries according to the character and density of the population, or the value to the community, and in the end the saving of expense by such ministrations. But for the hearty and most willing labours of the Practitioners employed here in 1854, and

the kindness of the Clergy and their coadjutors, it is impossible to say, when the severity of the Diarrhœa is taken into account, what increase of fully developed Cholera cases the City would have witnessed. The University being absent could neither share the risks, nor lend its aid.

CHAPTER VI.

The Conclusions.

The previous pages have been devoted, as far as was possible, to a brief statement of facts. It remains, before altogether closing this Part of the Memoir, to determine whether we are justified in drawing from it any definite conclusions. Considerations on some special topics are therefore here presented to the reader.

Theory of the Cause or Causes of the Disease.

§. 1. The facts which have been advanced both as to the mode of origin of Cholera in other places, and in the Districts now under examination, and the apparent anomalies and contradictions which almost any of the usual opinions concerning its cause present*, induce me to state the Hypothesis which after very attentive consideration I have been led to form, from the knowledge which here and elsewhere has been within my reach. But *first* I must hazard certain statements which will probably receive general assent.

1st, Diarrhœa always coexists with Cholera in any given locality, and is not communicated from person to person.

2nd, Cholera may arise without the suspicion of contagion †.

3rd, Cholera may certainly be conveyed from place to place by human agency ‡.

4th, It can scarcely be any longer doubted that the evacuations of Cholera patients are capable of communicating the Cholera ‖.

5th, It is quite certain that in the majority of cases, the Cholera evacuations do not communicate the Cholera.

6th, It is quite certain that in localities apparently exceedingly prone to development of the Cholera, Cholera, which is imported to them, may not be propagated §.

I think it is impossible for any one to consider these statements, without pre-

* See a summary of these at p. 4, Dr. Baly's learned, laborious, and valuable Report on the Epidemic Cholera, published by order of the College of Physicians of England: a work worthy of the Translator of Müller's Physiology.

† Case at Oakley, p. 42.

‡ Hailey and Witney, pp. 43, 44.

‖ See Dr. Budd's papers in the Provincial Association Journal, October 1854, and Dr. Alison's papers in the Edinburgh Med. Journal, December 1855.

§ Case at Wantage, p. 43.

vious bias, and with attention, without coming to the conclusion that not one cause, but more than one cause, must be in operation; and that it is by the coincidence of two or more causes that the true Cholera is produced.

General Phænomena of the Disease in the Oxford District.

§. 2. This I proceed further to elucidate by stating the forms of the Disease, which I believe to have occurred here between August 1 and November 1. From the general survey of the whole City which, as Consulting Physician to the Board of Health, it was my duty to take, and from the necessity of giving almost my whole energies to any work in which I could aid the Board, or my Medical friends, I necessarily from the first looked at the progress of the Epidemic as a whole. Nothing could be more striking than to see how differently the population was physically circumstanced from what it ordinarily is. I do not mean to say that every person had Diarrhœa, or that every person was on the verge of Cholera, nor that every person was consciously affected; but I do state as my firm belief, from what I learnt of the number of persons who were prescribed for by the Chemists, and were therefore relieved without being returned in the Reports, and from the remarks which were made to me, that far the majority were under some unusual influence. But what was this? Was it Cholera? Certainly not. Was it any thing like Cholera? Not at all. It amounted sometimes to this, that a person ordinarily constipated, and taking an Aloetic pill daily before dinner, for the months of August and September and October did not need it, but did need it afterwards: that a person who had one evacuation daily had now two, being otherwise perfectly well: that a third had a sense of weight referred to the epigastrium: that a fourth had slight nausea; these last having no variation in the character or frequency of the excretions, as the two first had. I am as sure that there was no fancy in this, as I am that the population feels hot when the thermometer is 90° Fahrenheit. What then? Is not this perfectly explicable by some abnormal condition of the surrounding atmosphere, or of the imponderable agents which act in some yet unravelled way on animal organisms? Is it explicable on any other hypothesis? Are there any other conditions common to a whole population than those furnished by these agencies? And does not this tally exactly with the glimpses which Mr. Glaisher and Mr. Johnson have given us? But then the effect is not Cholera, nor any thing like Cholera; nor is it conceivable, when we reflect on the various phænomena which the whole history of Cholera presents to us, that Cholera can be *only* the development of an atmospheric state.

In the Diagram which follows I have represented the extent and kinds of Disease which occurred in Oxford. Immediately after the Epidemic was over, great pains were taken to record the precise variations in the phases of the "Choleraic disease." This Table was then framed, and it was ascertained that it tallied exactly with the

observations of some of our most active Practitioners. It need hardly be remarked that only the prominent characters, and not all the symptoms of each variety, are recorded.

FIRST GROUP.

Disorder often Unnoticed.			Diarrhœa.			Choleraic Diarrhœa.
Variety 1.	2.	3.	Variety 1.	2.	3.	
Motions slightly more easy.	Motions natural.	Motions natural.	Slight Bilious Relaxation;	More Bilious Relaxation.	Bilious Relaxation.	Frequent *Bilious* Purging.
	Uneasiness in Epigas.	Uneasiness in Epigas.	Slight pain.	No Pain.	Pain in Stomach.	Severe pain in Stomach; and sometimes in Limbs.
		Slight Nausea.	Nausea.	No Nausea.		Frequent Vomiting.
					Vomiting.	Sometimes, cold surface, and feeble pulse, and death; Purging *Bilious* to the end.

SECOND GROUP.

Cholera.				
Variety 1.	2.	3.	4.	5. (very rare.)
Rice-water Evacuations.	Rice-water Evacuations.	Rice-water Evacuations.	Rice-water Evacuations.	No Evacuations passed.
No Pain.		Cramps.	With or without Cramps.	
No Vomiting.	Vomiting.	Vomiting.	Vomiting.	
No Collapse.		Collapse.		Intense Collapse.
			Urine wholly suppressed.	
				Death in very few hours.

The varieties of symptoms here recorded are those which certainly were observed in this place; the question is concerning the interpretation of them. No one doubts that in a Cholera period, 1st, *persons die of Diarrhœa, and of Choleraic Diarrhœa, without passing into Cholera:* and, 2dly, *such Cases do oftentimes pass into Cholera.* It is therefore right to examine most critically the confines or neutral ground between two Diseases, which are in themselves so widely apart, in their danger so unlike, in their relation to treatment so different, and which although so distinct do yet *pass from one into the other.*

Now the hypothesis is, That the First group are produced by "Atmospheric influence," (let the general cosmical conditions be so named,) without any specific poison; and that the Second group are produced by the same Atmospheric influence, as the first group, operating on discharges from the bowels, and producing a specific poison: the poison capable of acting on the individual who produced the discharges which can be so altered, or on other persons: the discharges innoxious, or incapable of communicating the Disease *until so altered;* but when so altered, either within or without the body, capable of distribution through the atmosphere, probably either in a dry or in a gaseous state, and of absorption by the lungs; or capable of solution in water, and of absorption by the digestive organs. Or, more briefly, one cause (the Atmosphere) produces the First group of disease, and along with the disease an organic product, (alvine discharge), which is innocuous until altered by the very cause which produced it, and then it becomes the cause of the Second group: so that it might be theoretically, and perhaps truly, said, that if the cause which produced the Diarrhœa ceased before the discharges could be acted upon, then they would remain for ever innocuous.

I have no desire to warp the facts which occurred here to prove the truth of this or any other hypothesis. Moreover, if the hypothesis be admitted to agree with the facts in this district, it need not of necessity agree either apparently or really with the facts in a more extended one. Yet the area of one county or of one Cholera district should furnish to the observer all the data for a correct induction; the variations which would be noticeable between one district and another, being to be traced, not to different *causes*, but to different intensities in the mode of operation of the same causes; as, for instance, a greater degree of heat in one district; of moisture and mist in a second; of consequent Diarrhœa in a third; of evacuations converted into "Cholerine*" in a fourth; of altitude, or of density of population in a fifth; and so on. The result of course would be a different order of phenomena resulting from the varying combinations; as the phenomena of an Epidemic in India; or of the outbreak in Golden Square in London.

The reader will have noticed that the facts, even in our outbreak, are by no

* Registrar General's Report on Cholera, 1848–9.

means reducible to any single or simple cause, unless we allow such latitude to the imagination as would make the attainment of any sound conclusion hopeless. For instance, few persons will doubt the connection between some Cholera outbreaks and the condition of the Water—as in our County Gaol; or in the more extended districts elaborately and meritoriously investigated by Dr. Snow. How does the distribution of Cholera evacuation by Water works explain the case of the man who, in a remote country parish (Oakley), with no traceable communication with any locality affected by Cholera, falls ill, while at work in a field. Think of the life, habits, and general circumstances of a farm labourer in such a place. Then he goes home, and all his family are attacked. Any just hypothesis of Cholera must explain a single case like this just the same as it should explain the devastation of a city. Both of these cases are perfectly intelligible, if we assume that the atmosphere or its concomitant imponderable agents produce on the whole human organism an effect resulting in Diarrhœa; and then convert the product into an active poisonous matter or matters. It would carry this Memoir into an altogether improper length if all that can be advanced, either in support of or in opposition to this proposition, were discussed. It is sufficient to remind the reader of the ever familiar illustration of what is known of the mode of propagation of Small Pox, or the Vaccine Virus; and of what is surmised of the nature of infection in Typhus, or in Scarlatina. The propagation of Cholera is probably more complex by one step than either of these diseases. It is tolerably certain that the poison of Typhus is a gaseous body, capable of dilution by and in atmospheric air, until it becomes perfectly innoxious: it is highly probable that Scarlatina is not merely a gaseous body, but a distinct organic matter not yet reverted to gaseous simple or compound substance. But these poisons operate at any time, though more powerfully at one time than another. Cholera operates only at certain times, and these times, or this combination of Meteorological circumstances, occur but rarely.

There follows a great Practical and very Simple Conclusion from considerations of this nature, that it is important beyond all power of expression, *to destroy with acids, or caustic alkalies, the organic combination of all Diarrhœa and Cholera evacuations*, immediately after they have been passed; and to apply the same precaution to all evacuations in any way resembling them, as I have elsewhere, in common with others, related*.

* See especially Dr. Alison's paper above quoted, Edin. Med. Journal, Nov. 1855, with the references he gives.

On the Spreading of the Disease.

§. 3. Two conclusions seem to be inevitable from this Epidemic, and both seem to be borne out by the history of Cholera in other places, both in 1854 and in previous Visitations.

1. That the cases may occur, as it is said, sporadically.

2. That they may spread by communication.

As to those that occur sporadically, it is generally supposed that there is some traceable cause connected with Sewage, Foul Water, or the like. But no such cause could be shown in the first case in Oxford, or in the Oakley cases, or in the Little Milton cases. But then the evidence is only negative in all these instances: there may have been communication by clothes or otherwise undetected. It is not however easy to believe, that in all the instances of undiscovered communication there had been either unknown contact or intentional deceit. In all questions of this kind we are compelled, as in various other subject matters, to take as evidence the greater probability; and this being so, we must conclude as probable that Cholera often arises without any communication with infected districts. So it is to be believed it arose in the two first cases in Oxford.

But, secondly, it is not to be doubted that it also spread in this district by communication. On this point, at the close of the Epidemic, the following question was addressed to the Practitioners who had been known to have attended Cholera cases. The most important of the answers are added.

I. Can you communicate any *facts* which have occurred in Oxford, to lead you to believe the disease to be contagious? and in what manner do you believe it to have been communicated?

In answer to this question Mr. Freeborn states:—

"On the 14th of September the husband of a laundress residing with her family, and carrying on business in —— Yard, the inhabitants of which had been perfectly healthy up to that time, removed to his house the blankets, sheets, and other clothes of a person who on the night of the 13th died of Cholera.

"The neighbours, angry at the removal of the clothes into their locality, took off the handle of the pump, and so for a time prevented the laundress from obtaining water. The blankets were then burned, but in the course of the day the sheets, &c. were washed by her and a woman in her employ.

"At 10.30 P.M. on the 15th of September, a child of this family, three and a half years old, previously perfectly well, was attacked by Cholera and died at 10.30 A.M. on the 16th.

"The surviving members of the family were immediately removed to the Field of Observation, in the hope of saving them, but on the 21st of September, an infant, about sixteen months' old, was taken ill and died.

"From this time a succession of cases of Diarrhœa, and one other case of Cholera, occurred in the same yard, and Choleraic Disease continued there until nearly every person in it had suffered in greater or less degree.

"I can also bear testimony to another case, which occurred in St. Clement's, of a woman who washed the clothes of a Cholera patient, took the disease next day, and died."

Mr. HANSARD writes:—

"Mrs. S. of Thames Street visited her brother J. R. in Floyd's Row, who was ill of Cholera. He died, and on the day of his death Mrs. S. was seized with vomiting and urgent Diarrhœa. This continued through the following day, ceased on the next, but returned on the 3rd. Collapse occurred, and though she appeared entirely to rally, she died on the following day. Her case was the first in the street, in which several cases occurred subsequently.

"J. B. was attacked by Cholera in its most malignant form on Sep. 16, and died on the same day. Mrs. H. and Mrs. E., the two nearest neighbours, were frequently with him. On the 17th Mrs. E. was seized by the disease. Two of her children were also attacked: one died, the other and the mother had severe Choleraic Diarrhœa and vomiting.

"Mrs. B., of Pollard's Yard, was attacked on the 11th of September, and died on the 15th: between which dates two of her children were attacked, both of whom ultimately died.

"A. H. had had Diarrhœa for four days, when on the 13th of September he was attacked by Cholera. Mr. and Mrs. W., living in the next room, were constantly in attendance on him. Mr. W. was attacked on the morning of the 24th, and Mrs. W. had an attack of Diarrhœa and cramps in the stomach.

"Maria W., after nursing two cases of Cholera, returned home to die."

Mr. HITCHINGS says:—

"Mrs. L., who lost her husband by Cholera, took his clothes and bedding to New Hincksey, and then washed them, and exposed them in the garden at the back of the house. On the following day a child in the next house was taken ill, and subsequently seven others, living in the three houses of which Mrs. L.'s was the centre, were attacked. From circumstances of a similar kind which came under my notice in '49, I conceive that the humid exhalation from contaminated bedding is a most fertile source of propagation, or rather regeneration, of the Disease. In Mazey's Yard the air was quite oppressive from the smell of Cholera. At Hincksey I could detect the smell where a child had lain ill two days.

"From such circumstances I cannot but think that by the removal of persons attacked from their habitations, the spread of the disease might be very much checked. Another reason why the treatment of cases in the town is objectionable is, that the evacuations are thrown into privies, which thus become, as it were, hotbeds of the disease. In Bryan's Yard the privy was already offensive and dangerous to health, yet into it were thrown the evacuations of eleven Cholera patients."

Mr. OWEN expresses his belief, founded on cases which have come under his own observation, that soiled Cholera clothes are especially dangerous when allowed to dry and then again disturbed.

To these cases of presumptive dissemination of the Disease by means of communication from house to house, and of communicability through the agency of clothes, within the town, must be added all the cases in the neighbourhood distinctly traceable to intercourse with Oxford. The isolation of country districts makes them

peculiarly favourable for investigations of this nature: the pertinent phenomena are more easily separated from others. There is very little doubt but that the two first cases in Oxford arose without previous communication with other cases; and it is most interesting to observe that the first case did not give rise to any others; it occurred in a superior house in a high and healthy locality. The second seems to be the nucleus of a nest of cases presently to be described; it occurred in a low and poor house on clay. (See Plate 2, p. 21.) Such an instance tempts us to jump to a conclusion concerning the conditions which cause the spread of the disease. If instead of *cause* we say *favour*, we shall be right. The country district teaches the same lesson. Read the History of Witney. The healthy countryman of Hailey is poisoned in Oxford: goes to his open village, has the Cholera; and recovers, and is at work now (1856). The disease in Hailey ceases with him. The man of Witney, who takes the medicine to him of Hailey, goes back to his sewer-stinking alley, has the Cholera, dies; and round him, as ripples that circle round a stone that plunges into smooth water, the Pestilence circled from his house round the alleys and low spots of Witney.

The other place which adds its quota of evidence in favour of this kind of communication is Garsington. The tragic history of this village need not be repeated here. (See p. 44.)

There were two other classes of instances discussed at page 42: 1st. That wherein the Cholera seems to have appeared without previous communication with Cholera districts, and in which the Cholera, when there, did not spread; viz. Albury, Little Bourton, Brize-Norton, Harwell, Lechlade, Winslow.

This class appears of course to correspond with the first case in Oxford.

2nd. The class of instances wherein the Cholera seems to have occurred without previous communication with other places, and did spread; viz. Abingdon? Banbury, Brill? Little Milton.

This class appears to correspond with the second case in Oxford.

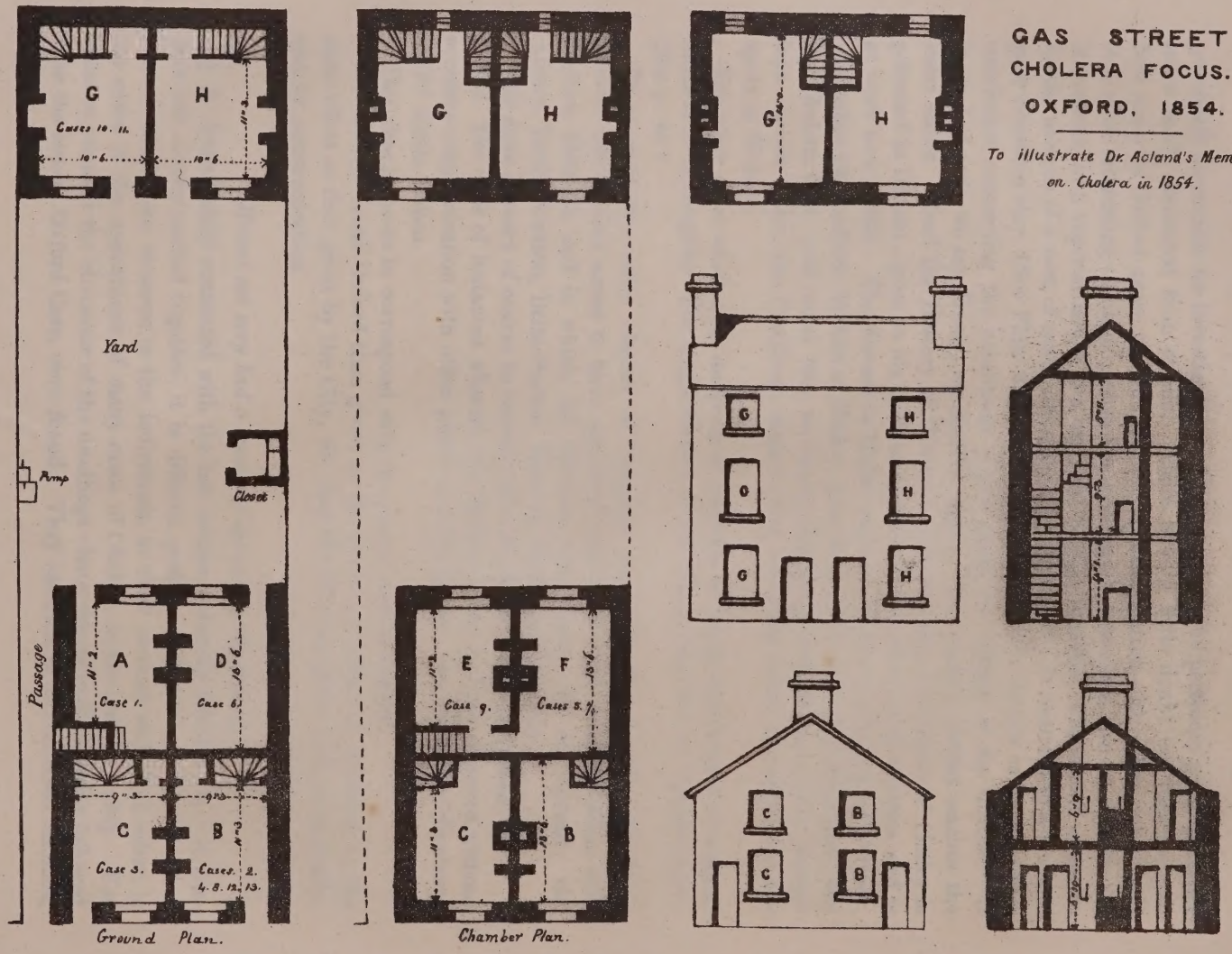
The district round Oxford then gives, as far as we can obtain it, evidence to the same effect as that given by the City, viz. that the Cholera arises both sporadically, and by communication.

Houses not very bad a means of spreading the Disease.

§. 3. Immediately connected with the last section naturally follows this. If persons are closely packed together, it is difficult, perhaps impossible, to decide whether circumstances common to the individuals, or their contact with each other, is the cause of the appearance of many cases of Cholera in the same locality. For instance, consider the character of the dwellings where the seven Cases, that followed upon the second Oxford Case, were found. They occurred in six different families,

GAS STREET
CHOLERA FOCUS.
OXFORD, 1854.

To illustrate Dr. Acland's Memoir on Cholera in 1854.



The Roman Capitals indicate the several Families. The order in which the Cholera appeared in the Rooms is shewn by the numbered Cases. C & H are separated from the Block A. B. C. D. by the Yard which is common to all the Dwellings.

all living under one roof. Under this same roof there were eleven Cases. Of the six families, two had two rooms each, and the remaining four families each one room. The families, it is true, were not large, in the whole not exceeding twenty-seven persons. But then the eight rooms they had among them did not stand on more ground than twenty-eight feet by eighteen feet, exclusive of the external walls; they were placed on two floors, and each room contained about 740 cubic feet. In four instances there was no additional accommodation for each room; cooking, washing, living, and sleeping, all went on in the same apartment: two of the families had an additional room. It will be noticed therefore that among the four families with a single room, there were 3040 cubic feet of air, including the displacements by furniture, stores, and rubbish: in other words, to each of the sixteen persons about 190 cubic feet apiece. In the four front rooms, where the two families had each a living room and a bed room, there lived eleven persons. These eleven had each on an average about 260 cubic feet of air. But then they changed the air day and night, an advantage denied to the sixteen in the back rooms.

Opposite is a plan of these tenements. They are described thus particularly because they are *not* especially bad: an over-coloured picture of wretchedness destroys the purpose of him who draws it: many rooms in Oxford are far worse than these. There is an open street in front; a passage at the side: a yard thirty-five feet long behind: there was a privy behind not specially foul; a pump removed twenty feet from it. A privy worse by far was attached to an adjoining house, and there no Diarrhœa of note occurred. There is therefore here the one condition of too many people in too small space. This is, in plain words, *life in poisoned air.*

The history might be more easily enlarged upon than, as is my duty, curtailed. Let it then only be repeated: this is not a bad house; not a bad locality, as houses and localities are counted bad; but it is a kind of house, and a kind of locality, and this is a kind of life, for those who live it, which begets eleven cases of Cholera upon two floors, built on a piece of ground about 28 by 18.

The inhabitants of Oxford and the surrounding district are now in a position to calculate the chance of their safety in a future Epidemic, and to form an estimate of the propriety of adopting such preventive sanitary measures as experience and science suggest.

Previous Preparation is necessary, and economical.

§. 4. The noxious effect of foul water, the danger of improper living, and the risks of imperfect nutrition as exemplified in Oxford, have been sufficiently dilated upon. One other circumstance remains to be noted.

In this Epidemic several Cases occurred at our House of Refuge. This fact does not at all invalidate the value, or throw doubt on the necessity of such an institution. It directly points to another moral.

The Cholera came upon the City in a state comparatively unprepared: no Hospital was ready, till the Epidemic was at its height: no House could be hired for a Refuge. A large Field was obligingly granted by Mr. Brooks. This might have served its purpose well, but the thorough separation of the two establishments, and the procuring furniture for the Hospital, was allowed to take much time: no efforts on the part of the Lady and the Superintendent in charge could meanwhile keep the Hospital and the Refuge distinct. Indeed for several days there was but one privy for both departments, and that was on the side of the healthy persons.

Moreover it was believed to be necessary that all work should be executed through the Workhouse. The Workhouse was to supply food, crockery, servants. It took time of course to turn a rigorously economic establishment into one in which the first elements, as well of efficiency as of economy, are, saving of time, and doing what is to be quickly done also in the best manner. We therefore waited two or three days, or even more, for what might have been had for a trifling sum within an hour in the Town; as crockery, chairs, candlesticks, and the ordinary requisites of a sick room.

These things will never occur here again: they are only now named for the sake of other places. We had to wait, at various times, for beef-tea for convalescents; and more than once received it unfit for use. It was sent half a mile to the Central Police Office, when we might have had it from a respectable shop twenty yards off from it: and finally were obliged to set up a kitchen close by in the Town Hall. This result had been foreseen and stated: but the Authorities had felt themselves bound by the routine of the Workhouse, and it was only after failure that the obvious and efficient methods were admitted to be right. The circumstances of towns and districts vary. There is not one rule for all. At Witney, close by us, I believe that there was no failure even at the outset of the arrangements: the Board of Guardians from the first implicitly relied on their Medical Adviser, and energetically conducted their work, as I believe we did in the end, to a successful issue.

Summary of the Principal Conclusions.

§. 5. 1. The history of both the City and the surrounding District unite in giving weight to the belief in the origin of Cholera without communication with other Cholera districts.

2. Both the City and the District give evidence of the occasional communication of the Disease from place to place, and from person to person.

3. They both lead us to the conviction that places, and attendants on Cholera patients, may enjoy a perfect immunity from Contagion.

4. From the survey of the City, we are inclined to believe that this immunity is less probable in proportion as less attention is paid to the destruction of the Evacuations.

5. Contact with the Evacuations is therefore exceedingly dangerous.

6. The Hypothesis which refers Diarrhœa to the state of the Atmosphere, and Cholera to the metamorphosis of Diarrhœa Evacuations by and in that Atmosphere, derives support from these considerations.

7. The poison of the Evacuations may be conveyed through the Air, or by the agency of Water.

8. Therefore poisoned Water, though one means of spreading the Disease, is not the only means.

9. For these reasons, and from the facts observed, we may conclude, and do assert, that crowded dwellings and imperfect ventilation are dangerous in the highest degree, during the prevalence of a Cholera Atmosphere, to those who are subjected to them; just as they are ruinous to Health at other times.

10. We must therefore conclude, that such dwellings, and such bad ventilation, are dangerous, not only to the persons exposed to them, but to the whole District or Town which surrounds them.

11. A low scale of Diet favours Diarrhœa, and a better Diet tends to check it.

12. Occupation exercised no marked influence in this District, and indeed persons in easy circumstances were more attacked proportionally than night-soil men, who work mostly in the open air.

13. The lower half of this City was most attacked; but the lives of those who reside in the upper and drained portions are unquestionably endangered by the condition of the lower and undrained parts.

14. Preparations for Epidemic Disease should not be left till the Disease appears: there should therefore be Wards in every Town, proper for receiving persons suffering from such Disease.

15. Common prudence suggests that these Wards should in Hospital Towns of moderate size be attached to and be managed by the Hospital: that in smaller Districts, as the law now stands, they should be under the control of the Guardians; and that in a few of our largest Towns, separate establishments may be founded for the purpose.

16. Such habitual preparation is, if discreetly contrived, less costly than the arrangements necessarily resorted to during the emergency.

17. All the known conditions for favouring the spread of Cholera existed in Oxford: some have been attended to and remedied: some have been neglected and are not remedied. All known local causes may, by systematic forethought, be either removed from the City, or anticipated, and guarded against †.

† Any one desirous of prosecuting the inquiry suggested by this Part, should compare these Conclusions with those given at p. 214 of "Reports of Epidemic Cholera, drawn up at the desire of the Cholera Committee of the Royal College of Physicians, by Dr. Baly and Dr. Gull; at p. xxv. of the "Third Annual Report of the Irish Poor Law Commissioners, under the Medical Charities' Act;" at p. 48 especially, but indeed the whole, of the "Report of the Committee for Scientific Enquiries in relation to the Cholera Epidemic of 1854, appointed by the General Board of Health;" and two papers on the Exciting Cause of Epidemics in vol. xiii, 1854, of the British and Foreign Medico-Chirurgical Review.

PART II.

ARRANGEMENTS MADE IN OXFORD DURING THE EPIDEMIC.

CHAPTER I.

Arrangements adopted during the Epidemic of 1854.

§. 1. On August the 6th, a Case reported as genuine Cholera appeared in Walton Road, Jericho; it was fatal. Between that day and the 31st of August inclusive, 5 Cases of Cholera, of which 2 were fatal; and 5 of Choleraic Diarrhœa, of which all recovered, are recorded.

On the 31st of August the Board of Guardians

> Ordered—That the Medical Officer of this Incorporation be authorized to employ such Medical assistance during the prevalence of the Cholera as he may think necessary, and that they be remunerated at the expense of this Board *. Also
>
> That a Committee be appointed to act in concert with the Commissioners as a Board of Health. That the Committee have full power to rent houses for the removal of persons from localities infected with disorder, and to supply medicine, &c.
>
> That the following Gentlemen be the Committee: viz. the Chairman (Mr. Carr), the two Vice-Chairmen (Mr. Cartwright and Mr. Boddington), Mr. Alderman Butler, Mr. Alderman Sadler, and the Mayor (Mr. Alderman Spiers), with power to increase their number.

A meeting of this Board so constructed took place on the 2nd of September, and agreed to obtain the use of the field in Jericho, known as Brooks' Close; to convert a shed in that field into a House of Reception or Observation, with three rooms, properly floored, warmed, and lighted; to erect in the same field one or more Tents as temporary accommodation; and to arrange with the Street Commissioners, that, whenever any case of Cholera occurred in the dwellings of the poor, the house should be immediately cleansed and lime-washed.

Between September 1, and September 7 inclusive, 15 more Cases occurred in the widely-separated localities of Blackfriars'-road, Jericho-gardens, St. Clement's, on the River, Market-street, St. Aldate's, the Gaol, Hythe-bridge, and elsewhere. Of these 15 Cases, 12 were fatal, and only 3 ended in recovery.

* In consequence of this resolution the Union Medical Officer (Mr. Wyatt) obtained the assistance of Mr. Hitchings and of Mr. Godfrey.

These facts were not then so rigorously known, but enough was known to excite well-grounded alarm. It was known that fatal cases had occurred in *different* parts of the City; not in the lowest tenements, or filthy localities, but in its centre as well as its suburbs; that more than one had been but of few hours' duration, and that one had occurred in a person of easy circumstances, residing for the time in a healthy locality. This mode of invasion was very startling.

§. 2. Under these circumstances it was decided that the Writer should be invited to attend a meeting of the Board of Health, that the Board might consider with him whether any, and if any, what further measures were necessary.

At meetings held on September 7, and the two following days, the necessity of prompt action having been admitted, the principles, upon which arrangements were to be contrived, were agreed to, and the mode of carrying them out was determined.

These principles were generally as follows:—

1. That, considering the prejudices which existed on former occasions to removal to a Cholera Hospital, (or Pest House, as it was usually named), ample provision should be made for prompt attendance at the houses of persons affected with Cholera, or with Diarrhœa.
2. That for this purpose the City should be divided into Districts.
3. That Medical Attendants should be appointed to each District, in numbers proportioned to the probable wants of each locality.
4. That it was to be desired that the Medical Men acquainted with and resident in the City should, if possible, undertake these duties.
5. That for their aid, in a central spot messengers should be placed, who should convey either messages, medicines, blankets, hot bottles or tins, food, and such other necessaries as might be ordered.
6. That a staff of Nurses should be organized to be ready at all times, their address being kept at the central station.
7. That in each District there should be a Dispensary open at certain stated hours, and, if necessary, at all hours: and that in one central position a Medical man should be accessible by day and by night.
8. That provision should be made for distributing with method rations for the Nurses, and necessary food and bedding for the sick.
9. That accommodation should be provided at the Field of Observation, for the families of the persons attacked.
10. That in default of other accommodation being attainable, in that Field, but separate from the healthy, convalescents should be received.

11. That whereas all Cases could not be treated at their own homes, either from the filthy state of the houses, or from their occurring in lodging-houses, public-houses, or other places peculiarly unfitted for such treatment, a Hospital must be provided for such casual Cases.

12. That such Hospital might be in or near the Field of Observation, though separated from the healthy inmates of the Field; and that a special Medical officer should be appointed to superintend and regulate all the affairs of the establishments connected with the Field.

13. That under this management all clothes of Cholera patients were to be cleansed, bedding destroyed, and such articles of furniture as were deemed by Medical Attendants proper to be removed for purification from Cholera dwellings, should be catalogued, examined, destroyed, or cleansed and returned.

14. That for these last purposes an Inspector be appointed.

15. That a staff of persons be engaged to regulate and arrange all matters connected with the burial of Cholera patients.

16. That from time to time such notices as might serve to instruct or encourage, or warn the public, should be issued*.

---

§. 3. In accordance with the above principles, discussed on the 7th, 8th, and 9th of September, various documents were issued. All arrangements were so far completed by Sunday, the 10th, that at 7 P.M. of that day the House of Observation in the Field was in great part ready. The Medical Gentlemen were furnished with printed Instructions, and Cheque or Order Books, and attended their Dispensaries and Districts. Forms of Reports were prepared and sent in; and all was done that could be desired for guaranteeing to the City that the BOARD OF GUARDIANS were determined to secure, by God's blessing, the public health, as far as they were able.

Of the Documents issued by the Board, that dated Sept. 20th (originally printed in a bold type, on foolscap paper) is here given, as expressing in a brief form the general tenour of the working arrangements. It is hoped that they may serve as examples not unworthy of attention at a future time, or in other places.

* To these principles should in future unquestionably be added, That the most urgent caution be given to all persons engaged about Cases of Cholera, that the Evacuations be buried with Lime immediately after they have been passed, to prevent the consequences to be apprehended from their decomposition.

SIXTH PUBLIC NOTICE. OXFORD, SEPT. 20, 1854.

Public Health Committee of the Board of Guardians, of the Eleven United Parishes of Oxford.

Among the Arrangements ordered by the Public Health Committee are the following:—

It has been deemed desirable, for the purpose of allaying the alarm of the population in Oxford, while acknowledging the existence of Cases of Cholera in the City, to issue at present, in the name of the Committee,

1st. A General Statement of the Precautionary or Preventive Measures which the Board of Guardians have undertaken. (Sept. 8.)

2nd. General Advice to all Classes of Persons, adapted from Instructions furnished by the General Board of Health. (Sept. 8.)

3rd. A Statement of the several Medical Districts. (Sept. 9.)

4th. A Summary of the General Arrangements for the care of the Public Health of the Town, (of which this document is a corrected re-issue.) (Sept. 12.)

5th. A Caution against the Use of Castor Oil without Medical Advice. (Sept. 19.)

Copies of these Papers may be obtained at the Town-Hall.

The Committee sit daily in the Town-Hall, at Six P. M., to give information, or receive communications on any subject connected with the Public Health, either given orally or by Letter addressed to Mr. Alderman BUTLER, the Honorary Secretary.

Medical Attendance on Cases of Diarrhœa or Cholera.

Medical Gentlemen have been assigned to DISTRICTS and to DISPENSARIES.

They have been assigned to each of the Wards (as Districts) according to the following scheme:—

CENTRAL WARD.	All Saints' St. Mary Magdalen.	Mr. F. Symonds, Beaumont-street. Mr. Owen, Beaumont-street. Mr. R. Freeborn, Broad-street.
NORTH WARD.	St. Giles's, and Jericho.. Summertown.. .. .. St. Thomas's.. ..	Mr. Tyerman, 5, High-street. Mr. Wyatt, Corn-market. Mr. Godfrey, Beaumont-street. Mr. Leapingwell, St. John-street.
SOUTH WARD.	St. Aldate's. St. Peter-le-Bailey. St. Mary-the-Virgin. St. John's.	Mr. Hansard, 31, High-street. Mr. Martin, 4, Oriel-street.
WEST WARD.	St. Martin's. St. Michael's. St. Ebbe's.	Mr. Hitchings, Oriel-street. Mr. Hyde, (Mr. Martin's), 4, Oriel-street.
EAST WARD.	Holywell. St. Peter-in-the-East. St. Clement's.	Mr. Rusher, 48, High-street. Mr. R. Rusher, 65, High-street. Mr. C. Vincent, 90, High-street.

Application may be made to these Gentlemen by poor persons suffering from looseness of the bowels at any time; but for the purpose of more effectually, and more easily reaching the Cases that may exist, DISPENSARIES are opened in the following places:—

At Mr. Wyatt's, (the Union Medical Officer,) Corn Market, open at all hours.
The Radcliffe Infirmary, at all hours (by favour of the Board of Governors).
St. Paul's School, Jericho .. .. 7 a.m.; 7 p.m.—Mr. Hussey, Mr. Owen.
The Vicarage, St. Thomas's .. .. 7 a.m.; 7 p.m.—Mr. Leapingwell.
St. Ebbe's School, Blackfriars' Road .. 8 a.m.; 5 p.m.—Mr. Hitchings, Mr. Hyde.
The Parish School, St. Aldate's .. 8 a.m.; 7 p.m.—Mr. Hester.
The Dispensary, Mr. Wood, Broad-street
(by favour of the Committee) .. 9 a.m.; 5 p.m.—Mr. Wood.
St. Clement's Dispensary (by favour of the Charity Trustees) at all hours.—Mr. J. Hester.
And at 8 a.m.; 7 p.m.—Dr. Giles, Mr. J. Hester.

If it be necessary, arrangements will be made for keeping some of these Dispensaries open for a longer time.

Dr. Acland, as Consulting Physician to the Board, will give his advice and assistance in all the General Arrangements.

The Medical Gentlemen appointed to the Dispensaries will give advice to all poor applicants, (and in any urgent case,) at the various Dispensaries specified above, and will either give Medicine at the time, or a Prescription which may be dispensed by any neighbouring Chemist.

The Medical Attendant may give a *written* order on any Chemist, to send such Medicines, as he may think fit, for use at his Dispensary.

The Medical Gentlemen assigned to Districts will attend severe Cases of Diarrhœa or of Cholera wherever they occur, with as little delay as may be possible; but inasmuch as there is a Dispensary in every District open Morning and Evening, there can be no reason why the *slightest* case of Diarrhœa should be unrelieved for twelve hours.

It is with deep regret the Committee *have heard of Cases in which the poor have not sought advice until too late.* All who can urge them to greater prudence are entreated to do so.

MESSENGERS are kept, day and night, at the City Police Office, and *by a written order* addressed to them,* the Medical Attendant may receive at any hour, through these Messengers, either

A Nurse, Bottles ready filled with Hot Water,
Hot or Cold Beef Tea, Blankets,

or such other things as he may, in writing, with his signature attached, direct.

Instructions given in writing will alone be attended to.

* Medical Gentlemen may obtain Order-Books, Forms of Daily Returns, Tables for entering Cases of Choleraic Disease, and Dispensary Forms, at the Town Hall. They will find it convenient to write every Order or Note on the Business of the Board, on a leaf of their Order Book.

NURSES.

Persons desirous of being engaged as Nurses should enter their names at the Police Office, and, if possible, wait on Mr. Cartwright, at the Town Hall, on any day at Ten A.M. or Six P.M.

A Lady has undertaken the General Superintendence of the Nurses while they are in attendance on Cases of Cholera.

Nurses engaged in Cases of Cholera will be provided with food on sending to Mr. Boddington, one of the Vice-Chairmen of the Board of Guardians, at the Town Hall Kitchen, between Ten and Eleven A.M. or Six and Seven P.M.

Every NURSE, when disengaged, is immediately to report herself at the Police Office, or she will not be again employed.

In every Fatal Case of Cholera the MEDICAL ATTENDANT is requested, besides instructing the Nurse to take the necessary steps for *a speedy burial*, to point out to her, if time permit, what furniture he desires to destroy or have removed.

The NURSE will be made responsible for the removal of such things, by means of Messengers (who can be obtained at the City Police Office) to Mr. Clark's Close, adjoining the Field of Observation. They will then be destroyed *or* cleansed under the direction of the Inspector.

It is earnestly requested that in no case Clothes or Bedding, which have been used by Cholera Patients, should go to any Laundry, other than that adjoining the Observation-Field.

In case it is known that such articles are sent to a Private or Public Laundry, *an Order will be issued for their instant Removal or destruction.*

OVERSEER.

For the purpose of ensuring the thorough Care of the Sick, and the prompt observance of the Orders of the Board, and the instructions of the Medical Attendant, an OVERSEER will visit the House of every Poor Person who is reported to have Cholera, as soon as possible after Notice has been sent by the Medical Attendant to the Town Hall, to that effect.

This OVERSEER is under the immediate superintendence of Mr. Cartwright, one of the Vice-Chairmen of the Board of Guardians.

HOUSE OF REFUGE AND FIELD OF OBSERVATION.

In an open and healthy field, in the North of Jericho near Walton Well, there are prepared as 'Houses of Refuge,"

1st. A large tent, well floored with thick boarding, for a day room.

2nd. A substantial building, with fire-places, for sleeping Apartments.

3rd. A building in which either *Cases of Cholera or other serious disease occurring among the Families resident on the Field, or casual cases of Persons without a home,* will be treated by Mr. Wyatt.

4th. Adjoining to the Field, a Close for the destruction or cleansing of Clothes and Bedding.

Communications concerning these Departments may be sent to the Inspector at the Field, or to the Union Medical Officer, Mr. Wyatt.

In Cases of Cholera not fatal, the Medical Attendant may, if he think fit, suggest the removal of the convalescent to the Field of Observation.

In all cases, the Medical Attendant may suggest the removal of some Members of the Family to the House of Refuge—that their lives may be more safe—and the dwelling may be less crowded. He will then deliver to the Nurse, or to a Messenger, an order to the Inspector at the Field of Observation, "to receive No. of the family of A. B., residing at into the Field of Observation." The Inspector will then send, if necessary, a proper conveyance for their removal.

All persons so removed will be cared for by the Board of Guardians in all respects as much as the nature of the emergency will allow. Divine Service will be performed in their dwellings: and instruction or amusement provided for the Children by Ladies who have offered their services for this purpose, under the direction of the Rev. R. Tiddeman and the Rev. C. Marriott.

INSPECTOR.

An Inspector has been appointed, who will be responsible for the due performance of all Orders relating to the Cleansing and Destruction of Articles sent to Mr. Clark's Close, and who will Report on the Daily State and Wants of the Field of Observation to the Board of Health.

CLEANSING, &c.

Mr. Ormerod's Sanitary Report, the Letters in the *Oxford Herald* on the state of Oxford, the Evidence given before Mr. M'Dougal Smith, and Dr. Greenhill's and Mr. Allen's Tables, furnish such a mass of information on the state of Oxford, with respect to the condition of its Dwellings, Drainage, and other Sanitary matters, that when the intimate knowledge of the subject which is possessed by various individuals, as well officials and others, as the Parochial Clergy, is taken into account, it must be admitted that at least the faults and the dangers of the several localities are well known. But any information, or special details of the condition of impure apartments or dwellings, and all nuisances liable to affect the Public Health, should be reported to the Chairman of the Street Commissioners, or to their Surveyor, Mr. Galpin, at his Office in the Town Hall Yard. It is very desirable that such recommendations should be made in writing.

Medical Gentlemen are especially urged to give immediate notice of any rooms in which severe Diarrhœa, or Cholera, has occurred, and which they consider should be cleansed. The proper steps will then be taken to insure the abatement, or safe removal, of the evil.

DAILY REPORTS.

The Medical Gentlemen attending Districts, or Dispensaries, are requested to send to the Secretary at the Town Hall every morning at 9, a *numerical* statement, on a printed form, of the Cases of Diarrhœa, of Choleraic Diarrhœa, and of Cholera *, which have come under their notice in the day previous, reckoned from midnight to midnight.

They are further requested to send immediate notice, in writing, to the Town Hall of every Case of Cholera when they first become acquainted with it, with the Age, Sex, and Address, and any Remarks they may think fit to append.

By these means a complete Record of every case will be obtained and preserved.

The Mayor has placed a separate room in the Town Hall at the disposal of the Medical Gentlemen of the Town.

Information concerning these or other arrangements of the Board may be obtained from the Chairman of the Board of Guardians, Mr. Carr; the Honorary Secretary, Mr. Alderman Butler; Dr. Acland; Mr. Wyatt, the Union Medical Officer; or from the Committee, at Six p.m. daily, at the Town Hall.

On behalf of the Committee,

W. H. BUTLER, Hon. Sec.

* It is requested that this may include *all* Cases, whether among the poor or otherwise: but if any Medical Gentleman prefer to enter only those prescribed for on account of the Board of Guardians, he should enter on his daily return "exclusive of Private Cases."

The Form of Daily Report sent in by the Medical Attendants is here given.

DAILY REPORT OF CASES OF DIARRHŒA, CHOLERAIC DIARRHŒA, & CHOLERA.

	NEW.	OLD.
Cases of Diarrhœa prescribed for by me to day		
Cases of Choleraic Diarrhœa		
Cases of Cholera		

Deaths from Diarrhœa .. ..
Deaths from Choleraic Diarrhœa .. .. ..
Deaths from Cholera .. ..

(Signed) _____

_____ 1854.

The Form of Weekly Summary furnished at a later period follows: it is necessarily printed here in a reduced size.

Oxford, 1854. Cases of Choleraic Disease occurring in the practice of Mr. between Sunday, the , and Saturday, the , inclusive.

If any Case dies or recovers subsequently to this Week, enter in the next Week "No. ," "Dead," or "Recovered," with the Date.

No. of Cases.	Date.	NAME.	Sex. M. or F.	Age.	Occupation	Residence.	Whether Choleraic Diarrhœa, or Collapse.	Whether Premonitory Diarrhœa, or other symptoms.	Result, with Date.	Remarks, or Treatment.

SIGNATURE.

Notices of new Cases were transmitted to the Committee Room at the Town Hall the instant that they were known. In this manner the Board, and the Physician to the Board, the Inspectors and Messengers, were kept informed of the locality of each Case as soon almost as it occurred. Books containing thirty Cheques of the following form were issued for this purpose.

I have just seen the following new Case of Cholera, or Choleraic Diarrhœa:—

Name } *Age*

Residence

Day or Hour of Seizure }

Remarks

Signature _____

Dated _____

Permission was given to all Medical Attendants to obtain Medicine from any Chemists. The prescriptions were written, and orders were issued to the Kitchen, to Messengers, and others, only on a leaf of Cheque Books, of which the following is a facsimile *.

Name.

Date.

On Account of the Board of Guardians.

Name.

Date.

Signature.

* The covers of these two Cheque Books were of wholly different colours and materials. (In cases of this kind, where many persons were engaged, regularity must be observed. No orders would be acknowledged in vouchers which were not in the authorized orders; and the respective books were easily distinguishable at night.)

To these may be added the form of Daily Summary. One actual Return is here reprinted, half the original size.

MEDICAL REPORTS.

Daily Return of Cases—of Diarrhœa—of Choleraic Diarrhœa—and Cholera.

Monday, 18th September, 1854.

RECEIVED FROM	NEW CASES.			OLD CASES.			DEATHS.			REMARKS.
	Diarrhœa.	Choleraic Diarrhœa.	Cholera.	Diarrhœa.	Choleraic Diarrhœa.	Cholera.	D.	C.D.	C.	
Mr. A	20	..	5	21	..	..	..	..	..	
— B	5	..	..	5	..	..	..	..	..	
— C	32	1	2	25	2	4	..	..	..	
— D	29	..	1	13	..	1	..	..	..	
— E	6	..	..	16	..	1	..	..	..	
— F	7	..	..	3	..	..	..	..	..	
— G	20	..	2	10	..	3	..	..	1	
— H	7	..	..	2	..	..	..	..	..	
— I	7	..	..	..	..	..	..	..	..	
— J	10	3	..	2	..	3	..	..	..	
— K	3	1	..	8	3	1	..	..	..	
— L	19	..	..	13	..	2	..	..	..	Total.
— M	6	1	..	5	1	1	..	..	..	Under Treatment.
— N	14	4	..	35	..	..	..	..	..	New .... D. 207
— O	2	..	..	2	..	..	..	..	..	— .... C.D 10
— P	..	..	..	2	1	..	..	..	..	— .... D. 10
— Q	13	..	..	6	..	1	..	..	..	Old .... D. 175
— R	2	..	..	6	1	..	..	..	..	— .... C.D 8
— S	5	..	..	1	..	1	..	..	..	— .... C. 18
	207	10	10	175	8	18	..	..	1	428

One of the Weekly Summaries also is appended.

MEDICAL REPORTS.

Weekly Return of Cases—of Diarrhœa—of Choleraic Diarrhœa—and Cholera.

Sunday to Saturday, 23rd September, 1854, inclusive.

RECEIVED FROM	NEW CASES.			OLD CASES.			DEATHS.			REMARKS.	
	Diarrhœa.	Choleraic Diarrhœa.	Cholera.	Diarrhœa.	Choleraic Diarrhœa.	Cholera.	D.	C.D.	C.		
Sunday, 17th Sept. ..	178	9	9	150	4	11	1	..	2	Under Treatment	361
Monday, 18th	207	10	10	175	8	18	..	..	1	.. ..	428
Tuesday, 19th	167	3	7	168	13	24	..	2	3	.. ..	382
Wednesday, 20th ..	165	10	7	171	12	23	..	..	4	.. ..	388
Thursday, 21st	176	10	4	151	11	24	..	..	1	.. ..	376
Friday, 22nd	141	13	9	140	13	27	..	..	5	.. ..	343
Saturday, 23rd	150	10	4	137	9	30	..	..	5	.. ..	340
	1184	65	50				1	2	21		
	65										
	50										
	1299									Saturday.	
Under Treatment and Deaths	364									Under Treatment	340
										Deaths	24
Discharged or Cured....	935										364

It would be useless to reprint and tedious to read any more of the Notices, or describe in detail the minuter arrangements which were found to be desirable or necessary. But on the following points some information should be recorded, concerning,

1st. The General Distribution of the Medical Attendants.
2nd. The Field of Observation.
3rd. The Management of the Nurses.
4th. The Distribution of Food.
5th. The Care of the Clothes and Bedding of the Sick.
6th. The Arrangements of the Central Police Office.

Distribution of Medical Attendants.

§. 4. It was laid down as a principle that there should be a systematic organization of Medical Attendants, together with Nurses, fed by the Board, who should take immediate charge of Cases among the poor, *at their own homes:* while those only should be advised to remove to the Hospital, whose forlorn or filthy state, or whose

peculiar circumstances, rendered it imperative. Though knowledge on these points is now very widely diffused, it may not be amiss to quote here the words of the instructional Minute of the General Board of Health of 1854.

"The General Board have rather discouraged the multiplication of Hospitals for the reception of Cholera Cases. Experience has shewn that whenever a person is struck with premonitory Diarrhœa or Cholera, it is particularly desirable to keep the patient warm and strictly quiet, in bed, if possible, and to apply the proper remedies on the spot. Numerous Cases have occurred where the exhaustion, consequent on the removal of a patient in the early stages of the disease, has brought on, or greatly accelerated, a fatal Collapse. It will, however, be right to appoint some hospital accommodation for those who may be taken ill in the streets, or at a distance from home, or who live in crowded and unhealthy rooms, in which the proper remedies for the disease cannot be applied. The hospitals should be well ventilated, and well drained, and should be near the epidemic locality without being in it. Whenever there is a general hospital in the town, conveniently accessible arrangements should, if possible, be made with the authorities for the reception of necessitous cases."

This opinion coincides with the experience of various Medical Practitioners here. The subject has been carefully discussed in Dr. Greenhill's Memoir on the Epidemic Cholera in Oxford*; and the perusal, I think, of his investigation, and of other commentaries on the same subject, will convince a candid inquirer that, as was done in Oxford during the Epidemic now under consideration, provision should be made for attending with equal care in nursing the poor at their own homes, *and also* for removing certain of them to hospitals situated at easy distances from the poorer districts.

As is remarked by Dr. Greenhill, the best locality in Oxford for the western districts would without question be the Infirmary; but unhappily the Governors saw fit to decline to afford to the City the needed accommodation in 1849, and in 1854 there was no time to reopen the question; and the Board of Health was driven to the alternative of obtaining or erecting for the third time temporary buildings. As will be hereafter more fully stated, it is to be hoped this difficulty, waste, and injury may not again be brought upon the City.

It was then determined, 1st, to divide Oxford into Districts, the same Districts, or nearly the same, as those adopted in 1849, and to make the necessary arrangements for providing with Nurses, properly superintended and cared for, every case which required such aid. 2nd, to place the temporary Hospital at the Field under the care of one Medical Man, who was empowered and required to have an Assistant.

It will not be without its purpose to record two methods by which Districts may be attended under these circumstances.

The one, by the appointment of young men, or strangers, who have no other

* Appendix A. p. 44. Greenhill and Allen's Oxford Tables, &c.

occupation, and who being untrammelled by private practice, will be able to give more time for less remuneration than other persons, or residents. The other, by engaging the services of the Practitioners of the Town generally, who, inasmuch as they have other avocations, must be either paid less than the former class; or else, being necessarily more numerous, to ensure equal attention, must cost more. Now for three plain reasons, the latter was recommended to the Board. 1st, because the poor would have more confidence, in most instances, in those whom they know than in strangers. 2nd, because the great local knowledge and personal acquaintance with the poor, their dwellings, and their ways, give to residents corresponding advantage in meeting a great emergency, soon to pass away. 3rd, because (though an argument of less weight) it is a manifest injustice to engage the services of strangers, while resident Professional Men of worth and experience, are willing to devote their skill and their energies to the public service.

Such numbers, then, were appointed to each District as were deemed to be sufficient. The numbers varied frequently. Constant attention to the fluctuation of the Epidemic shewed where more help was needed, and where needless strength was applied. And it may be confidently stated (if any desire to know it) that extreme care was taken to control, in this so necessary department, every unnecessary expenditure.

In every District a Dispensary was opened evening and morning. The Union Medical Officer was directed to obtain an Assistant, and to keep an open Dispensary at his house, in the centre of the town, night and day.

In St. Clement's also the kindness of the Charity Trustees maintained a constantly open Dispensary: the same was the case at the Infirmary, and at the Oxford Dispensary in Broad-street.

The Names of the Districts and the Dispensaries, with the Gentlemen who undertook the charge of them, will be found at p. 88.

The sum agreed upon as to be paid for a District was £1 1*s.* daily as an average payment. If the work were heavy, it was understood this might be increased; if very light, that it would be diminished. The Dispensaries were fixed at half a District, or at £3 13*s.* 6*d.* weekly.

It will be seen how much labour was bestowed by the Medical Attendants, when it is stated that the cost of medicine at the Chemists, whose charges were most moderate, (about 1*d.* an oz. for mixtures, and on the same scale for other things,) amounts to about half the whole cost of the Medical Staff.

The Medical Staff were wont to meet at the outset of the Epidemic *every* evening, and afterwards by written notice. A room was provided in the Town Hall; and it is hardly to be doubted that the trifling arrangement of allowing tea to be in the room, and taken without expense by those who desired it, helped

to ensure the perfect good humour and kindly feeling which prevailed on every occasion. This would not be recorded here, but that the world has yet to learn in many things when it is well to maintain, and when it is better to dispense with, form and discipline. And it may be safely asserted, that in every class of life where hard service is required, a reasonable attention to the comfort and ease of those concerned is repaid a hundredfold by the elasticity it imparts, and the sense of sympathy which it evokes. On some of these occasions half the persons present might have scarcely rested for 24 hours before the meeting. One District Officer was called out every night but three out of 49, and in one night seven times. More than once he had severe Diarrhœa, and he was at one period in graver risk from exhaustion. These facts are of the Writer's knowledge, and may tell perchance to some, who have not so thought before, the labours of the Poorer Medical Men—aye, let not the word be cavilled at—among the Poor.

Field of Observation.

§. 5. It will be unnecessary to enter into any special details concerning the Field of Observation, because it is hoped that the Arrangements which were recommended in 1854 for this department will not in any future Epidemic be required. And this is the more fortunate, since of the several departments provided in the emergency of 1854, those placed in the Field are looked back upon with the least satisfaction; and their management cannot be referred to as a model for future imitation.

For the reasons stated above, (p. 94) it had been decided to make arrangements for treating the sufferers at their homes: still it was certain that casual cases of extreme destitution, or of extreme filth, would be met with, and that with these such a course was impossible: for such cases a portion of the Field containing a building that could be appropriated to the wants of a small Hospital was set apart. Here also it was decided to place the temporary laundry, for examining, washing, and purifying clothes and bedding. A storeroom was prepared for the things that had been cleansed, and a shed erected for the reception of the dead.

Unhappily no house could be obtained in or out of Oxford for the reception of Convalescents from Cholera. Neither the building employed in 1832, nor that of 1849, nor any other could be had. Of necessity therefore the convalescents were received in the Field. But the Chairman of the Board of Guardians was able to obtain from Mr. Clark the use of a Close, separated from the Field only by a garden. A passage was made through this garden. The healthy were transferred to Mr. Clark's Close, and the whole of the Field of Observation was appropriated for the Hospital and the convalescents.

That on a future occasion, if in God's Providence such recur, previous arrange-

ments should have been made for the Hospital, the convalescent, and the healthy in separate localities, is to be earnestly desired.

But if we cannot look on the material condition of this department with entire satisfaction, we may, it is believed, affirm that very much was done for the moral improvement of the inmates.

The Chaplain of the Workhouse, the Rev. J. Tiddeman, and the Rev. Charles Marriott, either or both were daily among the sick, the recovering, and those yet in health. Prayers were read at least once a day; books were freely given; and an estimable lady who, with more constancy than prudence could approve, and more energy than a woman's strength could long endure, was by day and by night among the people, superintended all the arrangements, and provided, to the best of the means allowed to her, for all their wants: in all leisure moments, with the help of her friends, she taught the children, not only by the teaching of books, and of needlework, but by the persuasion of games, and by the discipline of cleanliness, often not less necessary than unpalatable. Nor in these rude and temporary contrivances was a lesser but an important act forgotten: the cheerful decoration of flowers and of pictorial illustrations was provided at the Hospital and the other buildings; and an attempt was made to remove the horror of the pest house, by such means as we in this country, alas! are daily proved to understand so much less than any Continental people.

May these orderly habits, and the nightly prayers and the hymns of the infants, be transplanted to some widowed and fatherless homes, where they were not known before! While these acts of strength and love spring up in time of need, let none be heard to doubt the practical powers and noble nature of English women.

The Nurses.

§. 6. One consequence of the decision that Medical Attendance shall be provided at the houses of the poor is, that Nurses must be engaged, and that they should be accessible as readily as the Medical Staff.

This was done as follows:

In the Police Office, which is near the Town Hall and in the most central locality, a list was kept of all the respectable women who were willing and able to nurse in Cholera houses. Their names had been furnished mainly through the local knowledge of the Parochial Clergy. The list was arranged thus.

Name.	Address.	Gone out.	Returned home.	Qualifications and Remarks.
Anne Walker.	19, Osney Lane.	To Mrs. W.... 84, Speedwell St.		An excellent Nurse. A. B. Surgeon.

There was no lack of Nurses but on one day. The wages were 1*s.* 6*d.* daily, or 10*s.* 6*d.* weekly. After they had nursed three nights, they were allowed a day's rest, or the option of going out again to nurse. Rations were given to them every day. A cook was kept at the Town Hall to prepare them. The allowance was,

1 lb of Cooked Meat.	1 lb of Bread.	1 Bottle of Ale.
2 ounces of Butter.	1 ounce of Sugar.	Half an ounce of Tea.

Except by Medical order, no brandy was allowed.

When a new Case of Cholera was announced, in the house of any poor person, a Messenger from the Police Office proceeded to the house of a Nurse "returned home," and sent her to the place at which her help was required. It was then the business of an Inspector, Condé, an old Waterloo soldier, to go there, to ascertain whether the interior economy of the house was such that the order of the Medical Attendant could be followed. If not, his duty was to forward from the Police Office the deficiency: food, bedding, blankets, hot bottles, &c.

And lastly, because the most important, a lady, (who desires her name to be withheld,) visited daily every house (within a certain area) to instruct the Nurses, to comfort the sick, to cheer the disconsolate; and, where need was, herself to supply a sudden emergency, or to relieve a wearied attendant. By day and by night she plied this task, and when she rested, or where,—as long at least as she knew of a house where disease had entered,—is known to herself alone.

Over the whole of these arrangements Mr Cartwright, Deputy Chairman of the Board of Guardians, presided; he received the Reports of the Inspector, who gave a list of the daily state of affected houses; he paid the wages, engaged or dismissed the Nurses, and shewed in all his transactions the power of blending acute business habits with a most benevolent humanity.

Distribution of Food.

§. 7. Oxford is a small town: it numbers but 27,000 inhabitants: it claims among its residents, if not many individuals possessors of great wealth, yet a singularly large proportion of disinterested, benevolent persons, of easy circumstances according to their condition. It has a zealous body of parochial clergy, and excellent institutions for various purposes and ends of charity. It cannot therefore have many *destitute* families; for few are unknown, and to be known is to be in some sort cared for. It has no great manufactures to make a press of work and a profusion of wages *now*, and a failure of both *then;* but yet it has many *poor*, and a painful proportion of those to whom life is an ever sad struggle for maintenance, to the

degree and in the station wherein they have to work their life, with its history, its course, and its close.

In other words, we have here as elsewhere our rich and our poor—yet not too many of the former; our wise and our foolish; our provident and improvident; our pattern men and women, our drunkards and degraded; our luxury and our want; our Colleges and our alleys of filth; our enlightened and large-hearted philanthropists, to whom this world is a contemplation and their life a prayer; and our families, which through wilful sin, unsought misfortune, or continued sickness, find their labour or their folly a bitterness, and their life despair.

But within and beside this general view, there is one circumstance which necessarily causes much inconvenience and some distress to our labourers, and the smaller tradesmen, and so even up to persons of higher pretensions,—the length of our Vacations. The chief work of the town depends on the fact that it is a University town, and the absence of the University for four summer months is at times a grievous thing.

In the previous winter, 1853—1854, prices were high; less than usual was saved by even thrifty persons; the Long Vacation was come; many we know who, shrinking from public gaze, would *ask* no help; and many more (who had parish relief, or who were in daily risk of requiring its poor pittance) had certainly not sufficient food to strengthen them against the chances of disease in an infected locality. It would be useless here to relate any of the many instances, known to physiologists, of that which few doubt, the proneness to succumb to disease under circumstances depressing to either body or mind. The Writer, therefore, having considered these several circumstances, empowered the Parochial Clergy to give orders for cooked meat, to all persons who, living in spots where Diarrhœa prevailed, were believed to need it*. The kindness of Dr. Pusey placed the kitchen at Christ Church at his disposal for this purpose; but it was shortly after found that the supply did not reach all the districts affected with Diarrhœa, and therefore in addition to the gift of roast meat at Christ Church, and afterwards at Worcester College, and of uncooked meat in part of St. Ebbe's parish, it was decided to prepare at the Town Hall strong mutton broth, each pint containing about ten ounces of meat, and to authorize all the Medical men employed by the Board of Health, to order such quantities as they thought fit for the families of the sick poor whom they saw. The quantity of meat so given away was, after all,

* It was considered improper for the Board to undertake this. If done, therefore, it was to be done on the responsibility of an individual. But this responsibility was very quickly removed: for in a few days the Writer received nearly enough to defray all the expenses incurred. The Rev. Jacob Ley undertook the temporary office of Treasurer for this small, but most useful fund.

not great. For several days about 200 persons received it at the Town Hall, and about 100 from the other kitchens. The quantity distributed amounted to about 3000 lbs.

Very special inquiries have been made by me with a view to learn what success attended this method of prevention and of cure. Absolute proof of benefit is scarcely attainable; circumstantial evidence is overwhelming. The following letter from one of the District Medical Officers will give a clear opinion on this point.

"..... The Cases in which the distribution of food was clearly instrumental in checking Diarrhœa in my district were very numerous. There were from *thirty to forty* old Cases which continued from time to time to relapse, and the treatment appeared to be of little use, and in *all these* Cases the Mutton-broth and Beef-tea were given with the *best results:* in children this was always the case. There were many who suffered with pain in the stomach and sickness, (who had previously had severe Diarrhœa); these Cases all rapidly improved when the food was given. I hear but one opinion about the value to be put upon the distribution of food. I am confident that many lives were saved, and a great deal of suffering and pain to the poor patients who received it." .....

The Lady to whom reference was made above as superintending the Nurses, and visiting all Cases of Cholera in the worst Districts, writes:—

29th January 1855.

"I shall be delighted to give you some instances of the benefit derived from the distribution of food in the time of the Cholera, and I think I shall only find it difficult to make a choice amongst the numberless cases of this kind which have come under my notice. I may mention, however, *Green's Yard*, in which three families were suffering from Diarrhœa, and in one a death had occurred, before the food was distributed; but after they had received it for a very few days, they seemed quite restored to health. In *Orpwood's Yard* three deaths had occurred, and every house had Diarrhœa: after the food was given, there were no more fatal Cases, and the complaint was checked. In *Vaughan's Yard* a severe though not fatal case of Cholera had occurred, and most families had Diarrhœa; in all it was checked by the food, and the Cholera patient rapidly recovered, which, without the food, would probably not have been the case. In *Osney Lane*, where five deaths had taken place, and Choleraic Diarrhœa as well as the more simple form of the complaint was almost universal, the sickness very soon disappeared after the food was distributed. In the *Hamel*, where the mother of a family ultimately died of Choleraic Diarrhœa, nearly every other person in the house was suffering from Diarrhœa till they received the food, when it entirely ceased.

It would be almost endless to go on enumerating Cases similar to those, of which the details are naturally much alike. I am sure I could fill pages with them, as I might simply describe what occurred in every street in the parish; but if you will consider the few instances I have mentioned as mere specimens of what might be said of almost every house in our crowded yards and alleys, you will have a very fair idea of the extent of the benefits produced by the food. In addition however I must mention that it was of great use in assisting the recovery of Cholera patients, who would otherwise have probably sunk from weakness, and in preventing the disease amongst children and old people. You have asked me why it was that so many people required such aid as necessary food? To this I must answer, that there are many persons in every town who, under all circumstances and at all times, live on the verge of starvation. Of these kinds of persons we have trampers,

elderly people past work, persons of immoral habits, families with bad husbands, or deserted by the husband altogether, and many more of the same sort. All these are in no condition to meet such an epidemic as the Cholera, and as they must every where form a large proportion of the population, it seems to shew the necessity of raising the diet of the poor wherever the disease appears."

A person who in an official capacity knows the habits and lives of the poor of Oxford with great exactness, writes:

"There can be no doubt, but for the almost unlimited distribution of broth, &c. &c. Oxford would have suffered to a much greater extent than it already has."

And once more, our worthy City Marshal, Mr. Lucas, who saw daily those who came to the Town Hall, tells me, what I fully admit to be no certain argument, "Scores used to say to me every day, This food saves our lives."

Certainly I have no intention, as I have no desire, to imply that our Board of Guardians, or any Board of Guardians, allows out of door relief on too low a scale; but I presume that the allowances are generally calculated on the lowest scale consistent with bare maintenance in ordinary times, and that it is certain that a higher scale is more safe during an epidemic of Diarrhœa and Cholera, and probably in Epidemics generally. And I do wish to suggest it to those blest with abundance beyond their necessity, that they may with discretion add to the diet of their poorer neighbours, whenever again—and it may be not far off—the scourge of the Pestilence is brought once more to our doors.

Duties of Inspector.

§. 8. To prevent, as far as was possible, the spread of Disease by the distribution of infected clothes, an Inspector was appointed, whose principal business may be summed up as follows:

1. To attend at the place appointed for cleansing or destroying bedding or clothes every morning at Seven, and at other times.
2. To be responsible for the destruction of all things sent for that purpose. Great inconvenience arose from burning. Many things were therefore buried with quick lime.
3. To catalogue all things destroyed or cleansed, and to value them before they were destroyed.
4. To see that things cleansed were properly washed with Burnet's Solution, rinsed, dried, laid in store, labelled, and returned to the owners, a receipt being given.
5. To deliver bedding and clothes in lieu of those destroyed; to visit the houses to which clean and good articles were to be forwarded; and to ascertain that such dwellings had been cleansed by the Commissioners' Surveyor, before the clean things were delivered.

Special persons were appointed to regulate and superintend the burials. In this department much strictness and circumspection was necessary, for reasons which need not be dwelt upon.

Business of the Police Office.

The Police Office being in the centre of the town, and close to the Town Hall, was selected as the station at which messengers, and all things which might be required in haste, as bedding, water kept hot for filling stone bottles, &c. could be obtained. The Lists of the Residences of Nurses, and the Nurses' Register, were kept there. Much dissatisfaction arose for some days, because it was decided that for the convenience of the Workhouse accounts, the beef tea and Nurses' rations should be obtained from the Workhouse kitchen, and kept ready at the Police Office. The distance to the Workhouse was at least half a mile. The consequence could be foreseen. The provisions were either deficient, or in excess and spoiled. To strain ordinary machinery, constructed to do plain work, in the hope that it will move with rapidity and precision under heavy pressure, is a course neither prudent nor likely to meet with success. The Board established a kitchen in the Town Hall, to furnish the required provisions, under the superintendence of Mr. Boddington, one of the Board of Health, and no further difficulties arose. Respectable cookshops or taverns in a central position would answer the same purpose.

PART III.

THE LESSON OF THE EPIDEMIC.

CHAPTER I.

Our Present Condition.

§. 1. To enumerate the arrangements which a wise Community would adopt beforehand to mitigate the terrible scourge of coming Epidemics, would be to describe the manner in which a civilized and well-regulated people, acquainted with the laws of health and the causes of disease, would strive to live on ordinary occasions: and as this would lead the reader into questions of the most extensive nature—social, so called, political and religious—it cannot be fully discussed in this place.

That such a history, however feeble, will alone state the needs of any thoroughly peopled town, in the particular matter before us, a little reflection will show. It is quite certain, and it would be impertinent now to spend words in proving it, that the health of individuals is influenced by their manner of life: no one doubts but that a man may drink himself into hopeless dropsy; that by over labour he may induce heart disease; by imprudent labour disease of his lungs; that by mental excitement and late hours he may destroy the integrity of his nervous system; or shorten his days by ever working at work for which he is by nature unfitted. Instances of individual self-destruction from avoidable circumstances might be multiplied without end. With these individual cases we have not here to deal. Each man has a free will, and he must make his choice according to the knowledge he possesses. But with communities this is not so: they have lawgivers and laws: these may be good, or they may be bad. The Community may be barbarous or civilized. We have here to do with Civilized Communities only; and concerning them it is not to be doubted, and no educated person does doubt, that *communities*, as well as *individuals*, may violate the sanitary laws which our Creator has imposed on us; and that the consequence of the violation of these laws is punishment to the *community* for its *common* crime; as it is in the case of the individual for his individual crime.

§. 2. This argument can not be now pursued. In many places it has been shown, that bad municipal laws and bad local management cost more in many particulars than good laws and good management: to use a common expression, "Bad work makes work," and "the ratepayer pays twice." This subject also is as interesting as it is extensive. Life is a holy thing; and if communities throw away the lives of the individuals who compose them, or make these sickly, short, and miserable, the community will, in some manner, 'pay for it.' It will have work done badly by the crushed artisan while he lives; it will maintain him for years in his sickness, and his children on his death.

I should be ashamed of dwelling on subjects of this kind, did I not feel that in this matter, as in many others, many of the People of England have yet to awake as from a dream. Though scientific men, aided by the press, have for many years striven to rouse us to a sense of insecurity, the habits of our country, the lengthy labour of discussion which is to be gone through in most public questions, and the precarious results of the votes in public assemblies, retard improvement, and too often ensure mischief. From this and other causes we bid fair, when the Cholera again appears, in many particulars to be in as great danger as on either previous occasion. The last Epidemic was at its height here before efficient steps were taken to meet it. When the steps were agreed upon, in more than one instance they grievously miscarried, in consequence of the routine by which it was thought necessary to cramp them. And in one department, the Field of Observation, second to none indeed in importance, notwithstanding the undaunted energy of a Lady engaged therein, for many days the most common necessaries were deficient, and the most ordinary precautions unheeded. All this is well known here; and yet, after the fullest discussion, and in the most solemn manner, the Radcliffe Infirmary, the great Medical Institution of this District, decided that it could not assist in providing any accommodation for infectious disorders, or aid in offering alleviation to the City and County in the event of any future Epidemic Disorder*; and it is more than probable that, notwithstanding the urgent representations that have been made on the subject, we shall in respect of a Building fit to receive Contagious or Epidemic Disease, be as unprepared as we were in 1854, notwithstanding the terrible warning of the Cholera in that, and of the Small-pox in that and in the preceding year. Whether the General Hospital of a City or County surrounding it sees fit to offer such a boon to the People, rests of course wholly with its Managers; and, as I have said, with us the answer has here been a negative one; but that, with the warning which we have had, and with the Histories of former Pestilence, we should be content, when the General Hospital has so formally declined, to be without any permanent provision for Epidemic infectious disorders,

* See Appendix.

seems to be both undesirable and rash. The general relations of Provincial Hospitals will be discussed in a succeeding chapter, and this point will be there considered.

Sufficient grounds have, I think, been stated to satisfy the minds of most persons that our Sanitary arrangements are not complete; it will not be an idle task to consider the general plan upon which we should proceed to bring about their completion.

§. 3. L'Hygiéne, ou plutot la Civilization dont elle est une face, se résume en deux mots—Moralité, Aisance,—says a French writer †. In other words, to have "competency of living according to our condition," and "to possess our hearts right before God," are essential to our physical well-being. But—competency of living! Let the Urban, or even the Country Reader ask himself if all about him have competent meat and drink for their stomachs and their blood; competent air for their lungs; competent exercise—sufficient and not extreme—for their muscles; competent means of cleanliness for their skins. And under the second head: whether they possess their hearts right before God? Let him ask—has the intellectual, moral, and religious training of himself and those about him been such as to ensure, as far as our fallen nature allows, such habits of self-control, and such sense of duty towards God and his neighbour, as affords to the nervous system the chance of a competent use and competent repose? Alas! I trow not. So far from these words being beside or beyond the mark—they point to the eye of it, and yet do not touch the thousand circles which necessarily surround it. We must feel the bitterness of the evil which social life entails on the less honorable members of the body politic. The feet must tread the mire, yet they may be clad; and the hands may be washed and warm, though they be thick with toil. It is not simply a wrong to our Fellow Men, if that is withheld which they may justly claim: it is sin and degradation to the Rulers.

To all this England is now awaking. The question is—What is the Remedy? How can we apply it? Are we hindering or aiding it? Are even our institutions a hindrance or an aid?

We can answer these questions more cheerfully now in 1856 than heretofore. The law of England, thanks to the great exertions of eminent statesmen and philanthropists, makes provisions for the general healthiness of Town districts, and during Epidemics especially, which a few years ago could not have been hoped for by the most sanguine citizen.

§. 4. Yet many evils—some remediable, some not—remain. The following seem to be the chief, which, independently of the great questions connected with the demand and supply of labour, are incidental to great towns, and some of them in their

† Michel Levy. Traité d'Hygiéne Publique et Privée.

degree to Oxford:—Food, bad in quality; Water, insufficient or bad; Lodgings, insufficient in space, bad in natural site, and far worse by human agency; great Nuisances, such as offensive trades—slaughter houses; inadequate Drainage; inadequate places of recreation, or none; the all-but-necessity of bad company from the closeness of dwellings. Consequently on all these increased liability to disease: on account of the value of ground, small school rooms, with inadequate yards, rendering Education more injurious to health than in the country, and making "the child, the father of the man," more sickly than he need have been. There follows greater temptation to vicious habits in consequence of nervous exhaustion.

Connected with the Conditions of Labour, in many cases in common with but in excess over the country districts, are:—Wages insufficient for procuring ENOUGH of Food, Clothing, or Fuel, and Proper Lodgings; Prolonged Hours of Work in consequence of competition; insufficient time for relaxation, acting on the man's whole moral and religious nature through exhaustion of the nervous system; unhealthy work rooms.

To reduce these evils to their minimum, what are the means in our power? Some things we can do, each for ourselves. Some things we can do by voluntary combination. Some things can only be done by the legislature.

To exhaust these subjects would lead me very far beyond the limits of this Memoir. I shall therefore restrict myself to observations on a few of the most obvious and most practical points of our economy; viz. (1) Habitations; (2) Ventilation; (3) Drainage; (4) Medical care of the less affluent classes; (5) The relations between Moral and Physical well-being. It will be found that under these heads may be comprised most of what a Physician may venture to remark on the social condition of such a City as Oxford.

CHAPTER II.

On some Habitations in Oxford and their Ventilation.

Of the importance of Ventilation, or, in other words, of introducing healthy air into all dwellings, it is impossible to speak too strongly; nay, even it is scarcely possible to speak strongly enough; this applies especially to the houses of the poorer classes, whose rooms are usually smaller in all dimensions; they are generally lower, and more crowded, not only proportionally but actually, than the houses of the upper classes. I am quite satisfied that not only do some of the worst forms of physical disease depend on ill-ventilated dwellings, but also that some of the worst forms of vice are engendered thereby. This I state, not only on the authority of the many volumes which have treated on this subject, but from my personal

observations as a Physician in and about Oxford. Those who have not paid particular attention to this subject, may, I doubt not, think any words which at all properly describe the consequences of habitually living in inadequately ventilated dwellings, as exaggerated and forced. But such persons should bear in mind the following:—

That without Pure Air, in adequate quantity, the ordinary physiological changes of the human body cannot be carried on in their normal manner.

That in proportion as the air is vitiated from any cause the injury to the structures of the body becomes more or less severe and more or less permanent.

That fresh air to the amount of more than 200 cubic feet per hour is required for each adult. That if this is not provided, the same air is inspired over again.

That in some of the smaller rooms of the poor not a fourth part of the volume of air required for health is obtained.

That it is certain that a very great improvement may be made in the condition of all sleeping and living rooms by the introduction of Arnott's Valves into the Flues: although they do not completely remedy the evil where there is not an up current in the chimney into which they are laid.

So very much has been written of late years on this subject, that I forbear from wearying the Reader with any further statements. But I deeply lament the decision of our Infirmary to have gas burners without ventilating tubes, as being a mischievous example to this district: and regret, for the same reason, that the very careful and long continued labours of a Committee, including Professors Donkin and Daubeny, appointed to advise on its Ventilation, were set aside*. I have pointed out elsewhere that the enlightened Bench of Magistrates have shown their sense of the importance of the question, as far as Prisons are concerned, by the pains bestowed on this department of Hygiene in the construction and adaptation of the County Gaol.

But I cannot forbear quoting the following passage from the Appendix to the Report of the Scientific Committee of the Board of Health. There Dr. Arnott, in a Paper on the Influence of Atmospheric Impurity on Asiatic Cholera, writes—

"The department of the art of cleansing, which remains the most imperfect, is that of Ventilation. The reasons of this are, that air, under common circumstances, is invisible; that scarcely 200 years have passed since scientific men suspected that air was at all a ponderable substance—occupying space, and only in our own day, since air has been used for stuffing for air-pillows, and one kind, with the name of coal-gas, has been sold by measure from pipes, as water is, have people generally conceived of it as being truly a thing; that only about 100 years ago had even chemists learned that air or gas is not one unchangeable substance, but is one of the three forms called solid, liquid, and aeriform, which certainly many, and probably all substances, may assume under different degrees of

* See Appendix B.

heat, compression, and combination; that the particular substance, for instance, to which the name of oxygen has been given, since it was discovered by Dr. Priestly in 1783, which, in its separate state at the temperature of our earth, exists only as an air with which air-cushions may be stuffed, yet constitutes eight-ninths by weight of all the water on our globe, about a fourth of all the earth and stones, and a large proportion of the flesh and other parts of animals and vegetables; then men had not until lately reflected that solid or liquid filth in a house, if not swallowed in food or drink, can be noxious only when it gives out part of its substance as foul effluvium to be breathed; and, lastly, men knew not that expired ordinary breath, which, if inhaled again alone when recent or fresh, may only suffocate by excluding fresh air, becomes, when stagnant or long retained in a place, in part, truly putrid or corrupt, as turtle soup or venison might change, and may then assume the forms of the different poisons which produce the gaol, the hospital, or the ship fevers, and other spreading diseases, or of that which, when joined with the peculiar morbid agents of small-pox, measles, scarlatina, or cholera, cause these to rage. Acquaintance with such facts, however, being once obtained, men can understand that Ventilation is not of ordinary, but of paramount importance, for it can remove not only the breath-poison of inmates, but also the foul air arising from all other sources, and so may act as a substitute for good drainage until there be time and opportunity to establish that. There is no liquid poison which may not be rendered harmless by copious dilution with fresh water, so there is no aerial poison of which the action may not be similarly influenced by dilution with fresh air.

"It is important also here to remark that modern houses, since the introduction of close-fitting glass windows and of chimney flues with low openings for fireplaces, have been rendered what persons ignorant of the nature of air could not suspect, namely, singularly efficacious traps for catching and long retaining all impure air or effluvium which may enter them from without, or be produced within them. Such airs, the exhaled breath, for instance, being generally warmer and specifically lighter than the external air, are buoyed up towards the ceiling of rooms, where, if there be no outlet, they stagnate long, like oil floating on water, and are little disturbed by even copious streams of fresh, colder, and heavier air gliding along the floor from doors and windows to pass up the chimney-flue. * * Effluvium from such filth as cesspools contain has, in past inquiries, been that most attended to, but there are many facts to show that this impurity of retained and corrupted breath, scarcely heeded in general, has been the chief element of the foul atmosphere which has led to numerous Cholera outbreaks. * *

"With such facts in view as are set forth in the preceding paragraphs, all must perceive both the close dependence of men's health and well-being on the maintenance of purity of air within and about their dwellings, and the lamentable extent to which this object is missed in present ordinary procedure."

It is quite certain that there is no remedy for many of the houses even in a town such as this. Whether it would answer commercially to pull them down and rebuild them depends on so many local circumstances, that it is idle to offer any general opinion on the subject. I learn, on the authority of a very eminent builder, also a landed proprietor, that, commercially, the erection of a comfortable cottage in the country will not pay a proper interest on the outlay. Mr. Pusey made various endeavours to solve that problem, with some success. For many years, as every one knows, the County Gentry of England have bestowed much attention on the subject. The facts, in a commercial sense, are not easily attainable. A large landed proprietor in the west of England can erect a convenient, healthy, and archi-

tecturally picturesque labourer's cottage for *about* £100, or a double cottage for £160. Whether they would be built by contract for this sum, I cannot say*. Sir Walter Trevelyan has, in Northumberland, houses of this kind, that may well serve as a model; using square blocks of wood, prepared in a saw mill, and placed endways for the ground-floor: a mode of flooring more durable than any ordinary paving stone.

In the last few years we have had, in Oxfordshire, frightful instances of the evils of Foul and Bad Dwellings, as accessories in the production of Fever. The parishes of Fringford, of Mixbury, and of Souldern may be specified as lamentable examples of this: of course I do not pretend to assert that bad Ventilation and bad houses were the sole causes of the Disease in those villages, but that circumstances generally avoidable were so, is not to be doubted: and I am assured by Mr. Turner of Deddington, that overcrowding was the chief cause of the alarming fever at Souldern. As I have already described what occurred at Oxford, in Gas Street, during the Cholera of 1854, this point need not be further dwelt upon.

It is well known that such outbreaks are costly to a degree for the parishes where they occurred; and it is well known also that the spread of Fever may generally be entirely prevented by Hygienic rules.

The Manchester and Salford Sanitary Association have published advice to workmen on the choice of dwellings†: as their advice cannot be materially improved, it is here reprinted, for the consideration especially of any working men who may see these pages, and are not acquainted with the Tracts of the Association.

"1. Not to take house or rooms on the open bank of a sewer-river, nor near any standing water, or offensive works.

2. Not to take house or rooms without regard to sufficiency of the size in respect to his family.

3. Not to take house or rooms where the landlord will not undertake to keep the drains free from bad smells.

4. Not to take house or rooms which are blocked up at the back, and where a thorough draught cannot be made by opening doors and windows both at the back and front.

5. Not to take house or rooms where any room is over a midden, ash-pit, or privy; or where the privies face the houses.

6. Not to take house or rooms in a confined court or entry, and especially where there is in it an open midden or ash-pit, or where the privies are common to a number of houses.

7. Under no circumstance whatever to occupy a cellar, and always to seek for bed-rooms in which there are fire-places, and windows that readily open at top and bottom."

* Various designs have been carried out; notices of some prize plans, with full particulars, may be found in the valuable Journals of the Royal Agricultural Society (London, Murray), and of the West of England Society (London, Ridgway).

† Manchester and Salford Sanitary Association Tract Series, No. 2. See also, The Dwellings of the Labouring Classes. Roberts. (London, J. W. Parker, &c.)

The time is quite gone by when the workmen of England require to have the practical wisdom of these remarks explained at length. Those indeed who do not see the necessity of them, will nevertheless do wisely to act upon them forthwith. A difficulty however arises often in this, that only bad houses are to be had. Now, with respect to Oxford, it is manifest that none should lodge in bad and close rooms in St. Thomas', St. Aldate's, and St. Ebbe's, if they can secure better rooms in more healthy localities. They had far better walk a mile or two from their work to be in a good air when at home, than put up with the depressing influence of foul air every night. A miserable cottage in the country is better (unhealthy though it be) than a good room in a close alley with houses placed back to back.

I know no more honourable Memorial that any College or combination of Colleges could raise to show the sympathy they feel with their poorer neighbours than the erection on the healthy ground to the north of Oxford, (as, for instance, near the Infirmary,) of a set of Dwellings for the Labouring population, constructed in the best manner, and with all the proper arrangements for Water, Lighting, Ventilation, and Drainage. So much has been done for the domestic comfort of the poor by the erection of Baths and Washhouses, that it is a pity not to complete the good work. There is every facility for such a procedure, if a body of men in the City, such as the ten who cleared the Foul Alley in St. Thomas's, of which I have elsewhere spoken, were to place themselves in connection with the Metropolitan Society for Improving the Dwellings of the Industrious Classes*. They would find in the office of the Society ready advice, and the fruits of a large and practical experience. They would learn the precise cost, and obtain the commercial data for such an undertaking: for no man of business considers works of this kind as really successful unless they repay the founders. We may say, I think, with confidence with respect to Oxford, that if land were given, or leased on favourable terms, all doubt of even commercial success would be removed. Shares would be taken to secure the erection of the buildings, and these shares would be moderately remunerative. The experience of the Metropolitan Association, upon the whole, seems to justify this observation. Single rooms for single men would not repay us: dwellings for families on flats would.

I am thus particular on this point, because harangues on unhealthy dwellings are singularly unsatisfactory as long as healthy dwellings are not to be had.

Many parts of our City, now not to be spoken of with approbation, will be unexceptionable if the long anticipated Drainage is completed. Let the Reader examine once more the Map which faces the title-page, to see which parts are still imper-

* Metropolitan Association for Improving the Dwellings of the Industrious Classes. Charles Gatcliff, General Secretary, 19, Coleman Street, London. A pamphlet entitled 'Healthy Homes,' price 6*d*. Houlston and Stoneman, gives full information on this subject.

fectly drained, or wholly undrained. Then let him ask himself where the masses of the poor can take houses properly drained; even if the houses were fit for them in other respects.

CHAPTER III.

The Drainage of Oxford.

The Drainage of Towns in general, and even of Oxford itself, has been the subject of so much discussion, that it would be impossible, within the compass of so brief a Memoir as the present, to impart any knowledge beyond that which is within the reach of every one, or to attempt even a résumé of the whole matter. So many debatable questions, financial, engineering, sanitary, agricultural, and legislative, are involved in it, that the briefest statement would occupy a volume. Yet some notice must be taken of it, and as the Writer has given some attention to the subject, and has, for many years, had opportunities of forming an opinion on it, at least as far as regards Oxford, he feels bound to add in this place such remarks as, however trite they may appear to some persons, do yet deserve the serious attention of persons hitherto uninformed on the subject.

There are two main points to be attended to in the Drainage of a City situated as Oxford has been described to be (p. 21). The *first* is the keeping the alluvial plains of the Isis and Cherwell, into which the town abuts, free at all times of the year from surface floods. The *second* is the removal from the town of the surface waters, and sewage of the town, without contamination of the rivers.

First, as to the Drainage of the Thames' Valley. The condition of the Thames' Valley (and we need not speak of its tributaries) is a national disgrace. That the towns situated on the chief river of a kingdom such as England, should be subject to evils of which a small Dutch farmer would be ashamed, is remarkable; and that in a University town, a centre, therefore, of knowledge and intellectual progress, up to the middle of the nineteenth century, the cellars of many houses should be periodically flooded, and other parts wholly undrained, is startling. The fact is only to be noticed. The entire question of the causes need not here be discussed. To what *physical* conditions is it due? Manifestly to two. First, to the low situations in which houses have been allowed to be built; and, secondly, to the ponding back of the surface waters up the Thames Valley, by either a naturally inadequate river-outlet, (an exceptional condition in physical geography,) or by the obstruction of an outlet originally by nature sufficient. It excites grave reflection when we consider that the greatest works for regulating the Thames waters were constructed many centuries ago, and that had a similar sagacity to that engaged

in their preparation been exercised with regard to the works since erected on the banks of the river, the waters from Thame and Cricklade down to Teddington would not have been now the theme of so frequent reprobation. I have long been satisfied that until the GOVERNMENT take in hand the waters of the Thames' Valley as a whole, Oxford will never be adequately drained, and the City will not reach that acme of salubrity which it is reasonable to hope for, and proper to strive to obtain *. Nothing short of this will secure the desired result, the health of the inhabitants of this, the most important water-valley of England. If private interests and local convenience are to regulate the outlets of the chief waters of the country, the country at large must bow to their convenience, and suffer still, as it has hitherto suffered. If, on the other hand, the Thames reverts to what it was created to be, the great uninterrupted undammed water-course of the south-east of England, then the Thames' Valley may, under judicious management, become one of the chief gardens of England, and its perfectly regulated waters and irrigated ground may supply vast quantities of cheap food, profitably raised, to the Metropolis. To effect this necessary change, fresh Powers by new unfettered Legislation are imperatively demanded.

To ensure the full benefit of such a change—a change not only from floods at one time of the year, but also from offensive exhalations of decaying substances left by the receding waters at another, a second great alteration is required; *the sewage of the towns must not be cast into the rivers;* or if it be so cast in, then most vigorous measures should be taken to increase the stock of fish and other forms of animal life; nature's great preventive against the evils of putrefaction †.

But for two reasons it is patent to every one that neither the sewage of this, nor

* This opinion has its justification, if any be required, first, in the general nature of the case, as obvious upon the condition of the Valley; but secondly also, on the fact that attempts have been made with great energy to get the evils remedied, but without success. For a full account of the proceedings of a very thorough inquiry made in 1853, see Report of the Committee on the Inundations of the Thames, signed by Mr. Pusey. (Hall, Journal Office, Oxford.) I cannot mention the name of Mr. PUSEY, without adding my respectful but affectionate tribute to a man whose name will live as long as the progress of agricultural science in this century is remembered; and long after those who felt the charm of his noble heart are numbered with those that have been.

† I must not in this place permit myself to dilate on the advantages which might be derived under another state of river management, from pursuing an inquiry into the applicability of this great physiological truth to the purification of the Thames. Experiments on the breeding of fish have been brought to very practical issue in France and elsewhere; and though not prepared with evidence in support of this view, I believe that it may hereafter be found to be quite feasible, and perhaps also commercially and œconomically advantageous, to take measures to raise largely the stock of edible aquatic animals for the purification of the rivers of England.

of any other town, ought to be cast into the rivers: first, because it contaminates them: secondly, because it wastes organic rejectamenta which might be turned back again into the ascending series of the great chemical transformations ever going on in the circle of organic and inorganic existences. As to the first head, the contamination of the waters, if it were merely that foul, muddy, stinking waters are less pleasant to look upon, to smell, or to imagine of, than clear streams from the clouds and the watersheds, something, though not much, should be conceded to the taste of those who loved the baser sort. But in truth, let no words be wasted on the matter: foul rivers are a nuisance and an injury to health, a tale too often told, and a fact too easily proved, to require illustration here.

As to the second head, the waste of manure by casting the sewage into the river, I am almost deterred from expressing an opinion concerning this point, by the great difficulty of the subject—a difficulty the magnitude of which is not always rated highly enough. I might indeed honourably shelter myself under the fact, that having, as one of the City Commissioners some years since, actively urged that body to place the whole question in the hands of one of the first British engineers, all responsibility was removed from me on Sir William Cubitt's appointment, especially when I was able to witness the zeal and energy with which Mr. Macdougall Smith carried out Sir William's instructions in collecting the necessary data. But then I notice, first, that the Commissioners have entirely departed from Sir William's recommendation in one great question, the place of the Water supply, by erecting new Water-works at a spot below the City*, instead of, as he naturally desired, on a part of the stream above it; a point of the more moment, because the population will certainly extend up, not down the stream, on account of the far more salubrious character of the ground to the north of Oxford than in any other direction in the Valley. I therefore consider it quite possible that in other respects also his comprehensive view may be departed from, and therefore no injury arises from the reconsideration of it in this place. Indeed further, I may remark, that in Sir William's and Mr. Macdougall Smith's Report, though ample space is left on the plan for "Receiving Reservoirs for Sewage manure," near the outlet of the main, no plan is specified whereby we may decide on what course is to be taken with the Sewage deposit in the tanks, and no calculations appended in the body of the Report as to the probable value of such deposit. Under these circumstances it may perhaps be permitted to remind the reader of the chief points involved in the disposal of Town Sewage †.

* The new Water-works derive their supply, not from the river, but from a large Railway excavation, in a gravel bed, near the river.

† It seems to me undesirable, in a sketch like the present, to refer at every point to Reports and Authorities. In the Appendix will be found the Titles of some books, to which persons interested in the subjects of which this Memoir speaks may first of all refer. Most of them are in the Radcliffe Library.

First, All organic refuse*, that is to say, excrements, solid and liquid, of men and animals, waste articles from kitchens, slaughter houses, and manufactories, should be at once removed from the neighbourhood of human habitations.

Secondly, Those parts which are known to be most capable of reconversion into useful organic structures, or, in other words, which are fit for manure, should be removable in the least expensive manner to land capable of, or already in, cultivation, without contaminating, and so also being lost in the rivers.

Now, the refuse organic matters above enumerated may be either collected unmixed in each house, in convenient receptacles, and removed by human or by horse power. Or, they may be allowed to mix with surface water, other water, various detritus, and waste objects, and carried off by drains and main sewers; in which case it will require a head of water, variously applied, to clear or flush such drains and sewers.

In the first of these cases the receptacles, tanks, or cesspools may be fixed or moveable, that is, they may be emptied on the premises, and the contents removed, or they may be carried away to a convenient locality to be emptied. In this case, the matter fitted for manure may be applied to the ground in a more or less solid or semifluid form, or water may be added on the land to be manured.

In the *second* of these cases, the more solid portions and the urine are mixed with *large* quantities of water, and they cannot again be applied in a solid form except some process be resorted to for depriving them of the water which has been so freely added: in this case the urine passes away with the waste water, and is avowedly lost altogether as a manure; it being well known to be the richest constituent of the sewage †.

Each of these two plans has its advocates, and its advantages. In China ‡, in various European towns, Frankfort and Paris especially, both *fixed* and *moveable* tanks and cesspools are used, and are believed to be used both with convenience and profit. In Paris a company for the purpose of profit has been lately started on the moveable tank system.

To the English mind generally the cesspool system has become abhorrent, is loudly condemned by the Boards of Health, and would scarcely obtain a hearing. It may be questioned, however, whether the advantages of a thoroughly well regulated fixed or moveable cesspool system are fairly estimated at present in England, and whether the decision that no cesspool should be allowed to exist in towns of

* For a very clear exposition of the nature of this organic refuse, and its decreasing value, see a paper by Professor Way, on the Use of Town Sewage as Manure, Journal of the Royal Agricultural Soc. of England, vol. 15.

† See Professor Way, loc. cit.: Lawes in the Journal of the Society of Arts, 1855: and ordinary Physiological Works, &c.

‡ Through my friend Professor Max Müller, I have obtained from the Abbé Huc an account of the customs of China in this respect. See Appendix C.

moderate size, is either expedient, necessary, or just. But, on the other hand, it is quite as much a matter of question, whether this method (the only sound one of using the Town sewage undiluted) is better adapted in a commercial view for Agricultural purposes; and it is, I think, certain that it is far more offensive, and possibly more unhealthy even under the most perfect management, than an *efficient* system of cleansing by drains.

This *second* method, the removal of refuse by means of drains, is that, as the reader knows, which alone now finds favour in this country; and without venturing to enter upon the engineering questions connected with its mode of application, questions, be it observed, of the greatest nicety, and still in dispute among engineers themselves*, we must again recur to the two great cardinal points in the disposal of Sewage, that it be not allowed to foul the streams, and that it be employed, if possible, with profit. To this last point, the first being taken for granted, we may in conclusion turn.

This is a question purely agricultural and monetary. 1st, If the Town population of Oxford wishes to cart the Sewage on the lands *below* Oxford, will the land occupiers choose to have it? 2ndly, Will it cost more to distribute it over the land than the urban and suburban or farming and gardening population can with advantage to each pay for such distribution.

These questions have been argued with so great skill and learning by Mr. Lawes†, that for the present there is little more to be expected or desired in the investigation, and we shall be led, I hope, to a practical opinion with reference to the subject of our inquiry, how best to dispose of the Sewage of Oxford.

The conclusions of the distinguished Agricultural Chemist just named, will be not improperly represented thus:

First, That the value of Town Sewage has been greatly over-estimated.

Secondly, That its low 'manuring' value makes it unprofitable, if either heavy land-carriage or expensive works are necessary for its distribution.

Thirdly, That it is more desirable to apply it in a liquid than in a solid state.

Fourthly, That it is applicable to grass, rather than to any other kind of crops.

Mr. Lawes's valuable paper and the conclusions, as I have stated them, have special reference to the Sewage of London. Great mistakes on all kinds of subject matter are sometimes made by applying conclusions drawn from London to other places, and therefore these or other statements can hold good only in other places *mutatis mutandis*. On the whole, however, there is not much modification required

* See, for instance, Mr. Rawlinson's paper on the Drainage of Towns, with the discussions upon it. Minutes of Proceedings of the Institution of Civil Engineers, vol. 12.

‡ See the Journal of the Society of Arts, March 7, 1855.

in the application of Mr. Lawes's observations to towns of moderate size, and to Oxford especially, as will be seen in the sequel. The value of the refuse of houses, and especially of human excreta, is of course nearly the same here as in London, not much more or much less. There is probably a smaller proportional nitrogenous residue from manufactures. We should have therefore to consider only the bearing of the second and third propositions respectively. This is easily done.

We have, and always shall have, some grass land on which the Sewage may be employed at a moderate distance from hence, and as a matter of fact we do now send Sewage to more than fifteen miles from Oxford at a profitable rate to the seller, the night-soil man*, and the purchaser, the farmer, (so they believe respectively). It is quite *possible*, therefore, that a far larger part, if not the whole of our Oxford Sewage might be disposed of in this manner, that is, if it can be collected. The questions therefore are narrowed to these.

First, Is there any way in which the Oxford Sewage can be profitably employed on grass lands near Oxford?

Second, Should it be employed in the dry or in the liquid state, for the advantage of the farmer?

Third, Can it be furnished by the Town in the way most desirable, or sufficiently desirable for the land?

As to the first, this is admitted.

As to the second, the farmer can profitably employ it in either state, if it is brought within his reach at such a cost, that its manuring value shall equal the corresponding manuring value of guano at any given sum†.

As to the third—

1st, It appears to me to be proved by Mr. Lawes and Professor Way, that, as respects London, *the solid part of the Sewage cannot be profitably extracted from the sewers;* that is to say, reconverted from the liquid to the solid state. Mr. Wicksteed is of a different opinion, and his works at Leicester will in a few years determine the truth of his views on this great point, with respect to towns of moderate size. Meanwhile, however, the conclusion to which we shall presently come renders the decision of this question unnecessary, as far as Oxford is concerned.

But, 2ndly, (*a*) Mr. Lawes asserts that in sufficient quantity Town Sewage is useful, and at a certain price is profitable, as a manure in the liquid state; and, (*b*) as has been said, Mr. Wicksteed avers, that it can be solidified from the liquid state with advantage by his process; and, (*c*) lastly, our night-men prove that it

* There is a certain fallacy in this, for he is already well paid for emptying the cesspool. All the profit that he can obtain from the contents he has removed, is over and above the profit upon the removal.

† See Mr. Lawes's paper above cited.

can be carried with profit, in the form of compost (with ashes, &c.) to several miles' distance, this compost being made from the undiluted contents of cesspools.

We may therefore conclude thus. We have the choice of three possible methods of application.

1st, in the liquid state, discharged by drains or otherwise upon the land. (Lawes, Board of Health Reports, &c., &c.)

2ndly, in the solid state, after being reclaimed from drains and mixed with lime, &c. (Wicksteed, objected to by Lawes, and as I think unanswerably, so far as London is concerned, and by Way as a general question.)

3rdly, in the solid state, having been removed from cesspools and mixed with loam, ashes, &c. (Practice of China, Frankfort, Paris, night-soil men in England, &c.)

Of these three methods, the first and the third are much to be preferred. The second appears to be too doubtful in its permanent results, commercially speaking, to warrant me in placing it on an equal footing with the others. The first is simpler, and therefore, if it can be applied, better. The third in the competition of solid manures must necessarily have the preference to the second, as having never been diluted, and as having retained the urine; or rather such parts of it as have not been lost by decomposition. The urine is confessedly lost by the second scheme.

It remains then to consider the absolute and relative merits of the two methods.

1st, Distribution of manure over land from moveable or immoveable cesspools.

2nd, Distribution of manure over land from the drains direct.

(1.) There are grave objections to this method. In the first place, cesspools are probably under ANY regulations *less efficient* than a perfect drainage system.

(2.) They do not and cannot dispense with drains and sewers for the surface waters, and therefore, either the contents of the drains and sewers, with whatever filth they chance to receive, will have to be emptied into the rivers, or else disposed of as I shall point out presently.

(3.) They are exceedingly costly, though their advocates assert less costly than a drainage and water-closet system.

(4.) They are manifestly more fitted for small than large Towns, on account of the number to be conveyed along the main thoroughfares.

Against which may be set the experience of the Chinese, Parisians, and others, as aforesaid, (with the counter-statements, however, on the opposite side again.)

I conclude, therefore, concerning cesspools, however perfect, moveable, or immoveable, that, as far as I am acquainted, though there are not sufficient grounds to justify their total legal abolition, yet there is great cause to believe that, for reasons to be next given, an efficient drainage is preferable for Oxford, and that no cesspools should be allowed except under stringent regulations; in which case,

unless there were a sufficient number in existence to employ an active staff, they would shortly fail for want of commercial value; and the sooner in proportion to the efficiency and the success of the drainage system of irrigation to be proposed.

2nd. If indeed it be true that the best method of employing Sewage Manure is in the liquid state, then all the advantages of the former method, as far as the employment of manure goes, fall to the ground before the greater advantages of the better way; and it becomes at last a purely engineering question.

Let us then, lastly, consider the sum and substance of the arguments for the *liquid* manure. 1st, as manure, that is, agriculturally. 2nd, as a means of ridding the Town or Towns of excrements, that is, in the sanitary and engineering sense.

First. That there is some agricultural value in Town Sewage, though much overrated by most persons, is admitted, and requires no argument, as has been stated above (p. 118); the sole question is, the cost of bringing it to the farmer. If, therefore, the Town conveys the manure to land-occupiers, and allows the use of the manure at a rate satisfactory to the farmer, the latter is a gainer, and the Town loses nothing, unless the cost of conveying the Sewage to the farmer exceeds the cost of any other method of removal by a sum greater than the farmer pays for the use of the material *.

Secondly. It is therefore in the end an engineering question, which may be put thus:

It being admitted that the best plan for removing the Sewage from towns, is in most instances by means of drains; and it being admitted that most Sewage is, on the one hand, injurious to the streams, and, on the other, useful to the agriculturists; can the City of Oxford, without loss or with profit, distribute such Sewage to adjoining lands, and in so doing cause no injury to the health of the neighbourhood? Are there lands upon which the Sewage can be safely and profitably spread, and by what methods can it be done?

I think it would be presumptuous in me to attempt to answer this question involving so many and such important interests. Another question may however be put to the influential readers in the County and City, into whose hands these pages may fall. Is there a sufficient acreage of land lying in the Valley of the Isis and Cherwell, which could be made far more valuable by Sewage raised to such a height by steam-power, as to be applied down the valleys respectively by means either of the Devonshire 'catch meadows,' such as may be seen at Pusey, or by the

* There is an able summary of these two points in "Minutes of Information collected on the practical application of Sewer water, &c."—General Board of Health, 1852. I am not however prepared to subscribe to every axiom there laid down, though I should expect, from the great skill and labour employed on this and other of the most valuable documents of this able and industrious branch of the public service, to find their conclusions borne out.

plan of hand-pipes, and here suggested by the Board of Health, and stated to be cheaper of application than the catch meadows *.

I think it may be safely said, that in the mere engineering point of view there lies little difficulty. The Sewage might be conducted to any point below Iffley, on the line from thence to Sandford, or in a more southerly direction towards Kennington, and then be pumped by steam power to any height where ground could be obtained. The preferable site would probably be in Bagley Wood. It might have thence an efficient fall in very various directions, extending therefore the area of its operations, and diluting thereby also such odorous effects as may be produced†. Unfortunately I cannot on theoretical grounds recommend the application of the Sewage to the improvement of Port Meadow; but it might be made amazingly profitable to the Freemen, if properly drained and highly cultivated, and if it were supplied by the Sewage in regulated quantities.

In fact, it is hardly to be doubted that such a tract of land would amply repay the expenses attending the applications. Many persons perhaps are not aware that some land near Edinburgh treated in this way is let for £20 or even £30 an acre ‡.

I have felt it a duty to go into this subject at a length wearisome, I fear, to most readers, and in a manner superficial to a few. But my object has been to put both the importance and the difficulties of the subject clearly before as many as I was able. I add therefore, now, a summary of the most important propositions that I would suggest for consideration.

1st. That the Government should undertake to deal with the whole question of the management of the Thames waters, including its tributaries.

2nd. That a special regard be had to the breeding of fishes.

3rd. That with respect to Oxford a plan and estimate should be carefully gone into for applying the Sewage, by the method of irrigation, to grass lands.

4th. That steps be taken, when new powers are had, for the strict regulation of cesspools, but not for their compulsory abolition.

It remains for me to refer the reader to the following valuable Letter which Professor Voelcker kindly permits me to make public:

* I have no certain information to bring against this statement, but it is scarcely credible. Where there is sufficient fall, the west country catch meadows are constructed at far less cost than ordinary draining.

† It is unnecessary to add here calculations of the amount of Urine and of Fæcal matter, and their contained Nitrogenous constituents voided daily by the 26,000 inhabitants of Oxford. Suffice it to refer to Mr. Lawes' Paper, to Lehman's Chemistry, and various Physiological Works, for such particulars; and to add, that I am favoured by Mr. Lawes with the practical opinion that our Sewage water would be advantageously distributed over 200 acres of land.

‡ See Report of the Board of Health on Sewer water, &c.; quoted above.

" Royal Agricultural College, Cirencester,
Feb. 7th, 1856.

" Dear Sir,

The economic application of Sewage water, as you well know, is attended with considerable difficulties, arising, on the one hand, from the great dilution of this liquid, and, on the other, from the absence of any efficient method of economically extracting the soluble, and by far the most valuable manuring substances.

The attempts which have been made in this country to convert Sewage into a portable solid manure have failed; and I believe all processes that will be employed for this purpose must give unsatisfactory results, as long as we remain unacquainted with the means of obtaining economically the soluble ammoniacal and nitrogenized compounds, as well as the more valuable alkaline compounds, which together form so large, and by far the most valuable portion of Sewage water.

The lime process of Mr. Wicksteed, it is true, deodorizes Sewage water, but in my opinion is not calculated to produce a portable manure, which can be used with economy even beyond a short distance from the manufactory. In the elaborate paper on Sewage Manure, by Mr. Lawes, this gentleman has clearly shewn that the agriculturist can buy the same amount of fertilizing constituents, contained in Sewage manure, prepared by the lime process, at a much cheaper rate in the form of Guano, or of bone-dust. Mr. Wicksteed's calculation of the commercial value of the Leicester Sewage manure is not based on any data, but is merely assumed.

It is to be regretted that he proposes to verify his calculation by the practical experience of farmers, who may employ this manure, instead of calling into aid analytical chemistry, which might tell him at once whether or not his calculation be correct.

Practical experiments, except they are comparative, and made under the most varied circumstances, and extended over a long period, cannot determine the money value of a manure. The efficacy of a manure does not necessarily determine its commercial value. Lime, for instance, often produces a most beneficial effect on the land to which it is applied, but no one would think of estimating the commercial value of lime by the effects it produces when used as a manure. Its fertilizing value indeed is often much greater than its commercial or money value.

The Leicester manure, I have no doubt, may be applied with economy to many soils, especially to land deficient in lime; but the effects which it will produce on one soil, or even a number of soils, cannot serve as data for calculating its commercial value. This is ascertained by putting the question: At what price can I best buy in the manure-market those matters, which, existing in the Sewage manure produce a given effect? The determination of the amount of those substances contained in this manure, on which its fertilizing value

depends, at once enables us to calculate how much it is worth. Had Mr. Wicksteed applied this infallible test to the Leicester Sewage manure, he would have found that his estimate of the value of this manure is far too high.

In my opinion, the lime-process cannot furnish a portable manure, which when sold at a price that leaves a fair profit to the maker, may not be more economically purchased in other fertilizing matters.

Allow me also to point out to you an evident mistake, which has crept into Mr. Wicksteed's able Report. It is stated on the authority of Messrs. Aikin and Taylor, that the lime removed nearly all the soluble matter in the Leicester Sewage water, (see Wicksteed's Report, p. 46); and further, on the authority of Mr. West, chemist of Leeds, that the clear Sewage water, drawn from the lime-deposit, contained not a trace of any other matter than carbonate of lime, sulphate of lime, and chloride of sodium. Professor Way and Mr. Lawes, on the contrary, have shewn that the soluble ammoniacal compounds and salts of potash, which constitute a large proportion of the solid matter in Sewage water, cannot be removed by lime; a fact, I think, which every analytical chemist will find verified, who will take the trouble and possesses the requisite skill of thoroughly investigating this subject.

The impractibility of converting Sewage, by means of lime, into a solid manure may suggest the question, whether it may not be advisable to replace the Sewer system by tanks, in which the human excrements may be collected unmixed with foreign matters. Collected in this way human excrements no doubt are more manageable, and better adapted to the manufacture of a portable manure.

I am, however, no advocate for cesspools, for the following reasons:

In the first place, I believe, cesspools would nowhere be tolerated where the comparative salubrity of water-closets has once been appreciated.

In the second place, I would observe, that the periodical emptying of cesspools is a great nuisance, which in crowded cities would become intolerable, and be more or less injurious to the inhabitants.

In my own native place, Frankfort on the Main, most houses are provided with cesspools, situated below the cellar, and so large as not to require to be emptied but every four or five years. These cesspools, when nearly full, fill the houses with an insufferable smell, and as the town authorities allow their being emptied only after eleven o'clock at night, during the colder seasons of the year, much inconvenience, and, no doubt, injury to the health of the inhabitants is caused by them. The effluvia from the contents of the cesspools during their removal is so great, that those people who have friends whom they can visit, or can afford to take a journey, leave the house when the cesspool requires to be emptied. The sulphuretted hydrogen which is given off from the excrementitious matters during their removal, tarnishes every metal vessel in the house, and blackens the white paint to such an extent that the whole house has to be repainted. That no accidents occur I can only ascribe to the general custom of sprinkling the whole house with a solution of chloride of lime, and leaving doors and windows open day and night.

In the third place, I know that the manufacturer of a portable manure from undiluted

human excrements, experiences a similar difficulty to that which is felt in the attempt to prepare a valuable solid manure from Sewage water.

The Paris and Frankfort dried nightsoil manures are far more concentrated and valuable, than the portable Sewage manures prepared by the lime process, and yet the French and German poudrettes find little favour with the practical man, simply because they have found by experience that they can obtain the fertilizing matters contained in poudrette more cheaply, by laying out their money in the purchase of stable-dung, or guano, bone-dust, and other portable manures.

The reason of this is obvious. In the manufacture of poudrette, the constituents of urine, which in comparison with the solid excrements are far more valuable, are lost almost entirely. The result of this is a manure of comparatively speaking low fertilizing value, which the manufacturer can only dispose of at a fair profit, by asking a higher price than it is worth intrinsically. The conversion of the contents of cesspools into an economic portable manure, no doubt, is capable of improvement; but in our present state of chemical knowledge a great obstacle is presented in the impossibility of economically incorporating with such a manure the most valuable constituents of excrementitious matters.

As carried out at present, the manufacture of poudrette is neither very profitable to the maker, nor advantageous to the agriculturist who uses dried nightsoil manure.

Thus even on the score of the economy of preparing a portable manure from the contents of cesspools, the erection of tanks in the place of sewers, I believe, cannot be recommended.

These and other considerations, which it would lead me too far to detail in this letter, have convinced me, 1st, that the sewers of towns ought not to be displaced by cesspools; 2nd, that at present the manufacture of a portable manure from Sewage water cannot be carried out beneficially to the farming interest; and, 3rd, that the only manner in which Sewage water appears to me likely to become an economical manure, is to employ it for irrigating grass land, and probably also market gardens.

In conclusion, I may observe, that the soil is so excellent a disinfectant, that no injury to the public health would arise from an extensive system of irrigation with Sewage water.

Believe me, dear Sir, to be

Yours very truly,

AUGUSTUS VOELCKER."

Dr. H. Acland.

There can be no better commentary on the general conclusions of the previous Essay, and on the Letter from Professor Voelcker, than an Analysis, which has been made at the Royal Agricultural College at Cirencester since the above were in type. This Analysis is subjoined.

"*Composition of Leicester Bricks, made from Sewage by Mr. Wicksteed's Lime-process.*

Moisture	10·52
Organic Matters *	12·46
Oxides of Iron and Alumina	2·89
Phosphate of Lime (bone-earth)	2·27
Carbonate of Lime	52.99
Sulphate of Lime	1·76
Carbonate of Magnesia	3·67
Potash	·26
Chloride of Sodium	·45
Insoluble Siliceous Matter (sand)	13·50
	100·77
* Containing Nitrogen	·60
Equal to Ammonia	·72

"In glancing at the results obtained in the analyses of the Leicester-sewage-brick manure, it will be observed that its chief component part is Chalk. It contains also a good deal of Sand, Clay, and about 12 per cent. of Organic matters, besides 10 per cent. of Moisture, some Gypsum, Magnesia, and Phosphate of Lime. The Organic matter furnishes on decomposition but a small amount of Ammonia, and therefore is not worth much as a manuring constituent.

It will be observed, that this Manure contains little more than $\frac{1}{2}$ per cent. of Nitrogen, only 2 per cent. of Phosphate of Lime, or bone-earth, and no appreciable quantity of Potash, or ready formed Ammonia.

Now since the economic value of an artificial Manure depends principally, 1, Upon the amount of Nitrogen, which it contains, in the form of Ammonia, or Nitric Acid, or Nitrogenous Organic Matter; 2, Upon the percentage of Phosphates (bone-earth), and, 3, Upon the amount of Salts of Potash, it is plain that the intrinsic value of a Manure, which is as poor in these constituents as the Leicester Bricks, must be very small indeed.

A careful calculation will show that the whole of the Nitrogen, Phosphate of Lime, and Potash contained in 1 ton of Leicester Bricks, can be supplied in $\frac{3}{4}$ cwt. of Peruvian Guano and 1 bushel of commercial bone-dust.

The expenses for $\frac{3}{4}$ cwt. of Guano being 9 shillings, and for 1 bushel of bone-dust 3 shillings, will bring the intrinsic value of the Leicester Brick-manure to no more than 12 shillings per ton.

J. CHR. AUG. VOELCKER, M.D.

Prof. of Chemistry in the Royal Agricultural College, Cirencester."

CIRENCESTER, APRIL 4th, 1856.

CHAPTER IV.

On certain points affecting Voluntary Institutions for giving Medical Aid.

It has been said that one of the distinctive characters of the Christian era is the existence of great institutions, whereby they who need help, receive it; and receive it not by right, but by good will. Concerning this observation two things may be remarked; the one, that it is to be noticed of some men that they detest all which they receive from another as of favour: the other, that some claim from the community in which they live that their actual necessities should be provided for as of right. Both these propositions have a show of reason, and are often found to be popular. Both, when pushed to their extreme limits, are certainly untenable. In the happy order of things which the Providence of God has permitted to arise out of the mixed wilfulness and strong sense of our Anglo-Saxon Race, it has come about that the two principles above named, whatever may be said of them on theoretical grounds, have, in many particulars, and in every department of our commonwealth, been happily blended. Sometimes they clash: the voluntary labourers resent the compulsion of the State; and the State officials honestly desire to obtain uniformity of action. The unsymmetrical but mighty machine of a kingdom such as England, creaks in the ears of the Executive, as the multifarious and too often heterogeneous portions labour on their way. To regulate this mechanism, if its several parts play lawlessly, each on its own axis regardless of all unity of action, is manifestly impossible. To cripple the will of the individual centres, to force them to obey rigidly an inflexible law, is to pluck out the elasticity which forms the whole into a living body; to destroy the powers which made it what it has become, to stifle for ever the energies which alone give it the power of repair, and to condemn it to destruction by the pressure of surrounding and antagonistic elements.

Of this combination of principles, and of these modes of action, the Medical Relief, afforded to the Poorer classes in England, is an example.

Examine the instance of a County Town such as Oxford. A poor man ill has practically the choice of going into the sick ward of the Union-house, of being attended at his own home by the Union surgeon, of receiving advice at the Dispensary, of being attended at his own home by the Dispensary surgeon, of becoming an out-patient at the Hospital, or an in-patient at the Hospital*. If his case be chronic, he may, by selecting the admission-day, place himself under whatever Physician he pleases, in a medical case; or whatever Surgeon, in a surgical case.

It is hardly necessary to add that the State provides the Union Medical Relief; that the Voluntary kindness of individuals, bestowed by legacies, gifts, or subscriptions, secures the remainder; that to the extent of the State relief there is no

* Of course, he often obtains, besides or instead, advice from Practitioners not belonging to any of these Institutions.

limit; and to the relief afforded voluntarily, the limit of the size of the Institution, and the power of finding a Recommendation, if the Hospital be not a Free one.

Now, first, as to the Medical Aid provided by the State.

It is sometimes the fashion to decry the Union Medical Relief. Nothing can be more unjust. Every precaution is taken to ensure that it should be the best that is to be had. The Parish in full conclave elects its Guardian; the Guardians, or the majority of them, appoint their Medical Officer, and fix his salary. An able Government Commission watches their proceedings, and keeps them within certain bounds. There is every guarantee therefore that the Officer shall be the best that can be obtained; the regulations under which he acts, his salary, and his duties the most proper under all the circumstances of the case. If it be not so in the practical result, it must be because the electors do not do their duty, or because good medical men will not take the office, or because the State regulations are faulty: either one or two or all of these may combine. It is impossible for me here to pursue this argument to its end*; but this must be added. The Poor Law of England is one of the most amazing institutions that the world has ever seen. It is a guarantee on the part of the community, to every individual composing it, that he shall neither want food, clothing, shelter, or medical aid when he is in need and cannot, by his own exertions, or by reason of ill-health, obtain them. It is true that the State gives no more of these than is barely necessary for life—but it gives that. As Dr. Farr has it† in an invaluable Essay on Insurance:—

"In a nation without a settled system of relief, such as the Poor Law affords, the sick man often obtains relief at Hospitals in the large cities; he is sometimes succoured by the Priest, or by the Christian proprietor; but how often does it happen that all these resources fail, or afford only temporary succour to an abiding infirmity? Death by starvation is in England accidental; in the countries without a Poor Law—that is, in nearly every other country—the relief of want and suffering is *the accident*."

But he goes on to say, as it is necessary to add,

"The Poor Law is imperfect, as it professes only to be a provision against destitution; and provides the same relief for the accidentally ruined proprietor, merchant, lawyer, medical man, farmer,

* I cannot, with propriety, here discuss what is the proper amount of the salaries to be paid to Union Surgeons. The whole subject of Medical Relief, provided by the State, requires fundamental revision. I have been told of instances of Union Surgeons spending more than their salary on Medicine alone for the poor, for several years. It may be true that they prefer this to surrendering their office; but there is no question, I think, that it is ungenerous on the part of a State to allow the very necessities and known kindness of professional men to be a means of further overworking and underpaying them. The OXFORD Guardians have made liberal and admirable arrangements in their United Parishes. They have halved the work, increased the salary, and have given the Union Surgeons a Dispenser, and provide all Medicines. This is well for the Surgeon, better for the poor.

† See the Twelfth Annual Report of the Registrar General.

tradesman;—for the mutilated artizan, for the agricultural labourer, bending under the heavy labours of a long life, who have either contributed largely for many years to the poor-rates, or have supported themselves to the last moment of pressure, the same workhouse for all the unfortunate members of these classes as is provided for the vagrants, beggars, drunkards, unimprisoned criminals, for all the idle and improvident members of society, who never contribute to the poor-rates at all, but are constantly living, and breeding families of beggars to live in perpetuity, at the expense of the rate-payers."

The Poor Law does not profess then to provide any of the luxuries of life; and so gives help to none who can obtain better. It is quite conceivable that a State might compel all its members to insure their lives according to their station, but ours does not. Accordingly they who desire more than the supply of the Poor Law, and are able to obtain it from their wealthier neighbours, or to provide by Voluntary Associations, such as Benevolent Societies, and the like, do not come to the State for Relief. This applies to Medical advice, as well as to food and to shelter.

It should of course be remarked, that before the Poor Law had reached its present systematic and admirably contrived work of administration, many of our large Hospitals existed; and they were founded by benevolent persons because the State did not do its duty; and that, therefore, if we admit that the Medical Relief of the Poor is properly provided by the State, then such Subscriptional Hospitals are superfluous. It is the special object of this section to state clearly what seems to be the Function of such Hospitals; and under what conditions they may hope to continue to discharge, with advantage to the community, the duties they have undertaken.

Hospitals, supported as Benevolent and Voluntary Institutions, profess to provide medical aid either to persons who do not come within reach of the State assistance, or to give to those who do come within that reach, more than the State affords. If the matter be viewed rigorously, they ought only to do the former; because Medicine and Surgery can properly be handled only in one manner. The equality of man in his bodily nature raises her voice, and says, "Sickness is one to the poor, and one to the rich: or if not so, then, the poor, because of his poverty, needs the more in his sickness." Therefore the poor of the Union should be at least as well cared for as the patients of the Hospital. But, in fact, it is not so. A Hospital is one of those institutions that cannot be conducted meanly and well: a person may be warmly and meanly clad, warmly and meanly housed, well and cheaply fed. But he cannot be as well, as healthily, as readily cared for in his sickness in a poor Institution as in a more wealthy one; in a very small as in a larger one; in an Institution where cheapness rather than kindness and charity is the first law.

I do not mean to say that a ward in a Poor-house cannot be as well furnished,

and as kindly watched, and as skilfully officered as a ward in St. George's Hospital; but in many Poor-houses it would be difficult; in some impossible; in few, I suspect, can it be seen. But still the principle of the State Relief, as things are now, will enter more or less into the Infirmary of the Union; a magnificent Hospital, the pride of the wealthy, the joy of the loving, subscribers, will gather round it more scientific appliances, more medical talent, more earnest pupils, more trained nurses than the Guardians can hope to obtain. The large Hospitals will thus be deservedly esteemed a boon to those who can frequent them; and will be certainly preferred to even the best Infirmary provided, as at present, by the State, to be used at the will of all who need.

The desirableness then of the existence of Hospitals for the Poor, independent of and beyond the Medical relief afforded by the State, being admitted, they have corresponding duties. I will endeavour to state, first, what Functions a Subscriptional Hospital may be reasonably expected to discharge: and, secondly, what kind of persons should be able to profit by them.

A General Public Hospital should show itself to be—

(1) A Standard of Medical and Surgical Science and Practice, and a means of promoting a knowledge of both.

(2) A Model of Economical Arrangement, and of Scientific Sanitary Appliances.

(3) A Pattern of the Manner of Managing the Sick, under whatever aspect they may be considered.

First—Hospitals should be a Standard of Medical Science and Practice.

The question has been often discussed whether Hospital appointments should be obtained by examination, or as now, by the chances of popular election. Probably the best way is by leaving the choice to a Committee, appointed by the body of electors for the purpose. This has been done at St. Mary's Hospital in London. But, no doubt, upon the whole, the Hospital appointments in Great Britain and Ireland are held by a set of men inferior to none of their brethren. They have the advantages as well as the duties which belong to the posts of mark in their profession, and are virtually the chief teachers of it. It is unnecessary therefore to speak of Hospitals in this respect: they cannot, on the whole, be better officered. With regard to work done in imparting the knowledge which the Staff possesses, it varies according to the size, nature, locality, and popularity of the Institution to which they are attached. The Metropolitan Hospitals take the lead; and it is proper and eminently desirable that they should. It is only in special cases that Provincial Hospitals should attempt to compete with them. These cases are those

where the Hospital stands in the centre of a great population; and where therefore it is a large one, largely supplied with acute cases, and with numerous examples of slighter forms of disease: and where also the Medical Staff is picked from a wide circle of active Practitioners. Provincial Hospitals can have no vocation to teach students if they are not so circumstanced; with this reservation, that a *small* number of hard working men can obtain a great deal of Clinical knowledge in a small Hospital: either at the outset of their pupillage, or at its close: a first-rate Medical Education they cannot get.

Nothing else can offer the peculiar benefits which a large Metropolitan Clinique bestows. An advanced student might have great advantages in a Hospital such as the Radcliffe Infirmary. Not however as that is now conducted. A young man entering as a pupil there sees only the practice of *one* person: he is one man's pupil. He could perhaps enter to several of the Staff; but that is not the custom. He therefore studies one-seventh of the cases. The same arrangement exists with the Clinical Professorship. Instead of there being, as in Edinburgh, two or three Clinical Teachers, one Physician alone gives Clinical Lectures: so that only a third of the Medical Cases, or not a seventh of the inmates serve for Clinical Instruction*.

There are reasons which need not be discussed in this place, why in Oxford and Cambridge it is unquestionably desirable that there should be a certain range of Medical and Surgical Instruction; but, speaking of Provincial Hospitals generally, their function as teachers is not that of giving lectures to pupils. It is being to the surrounding districts the accessible, public standard of the state of Medical and Surgical Practice, and of Medical and Surgical Science and Apparatus. It is a silent testimony they give, but an invaluable one. But for this purpose they must in every thing be kept as nearly as possible on a par with the Metropolitan Hospitals. Why this is of special moment will presently appear. Let it therefore be here only repeated, that the first aim of a Provincial Hospital should be to meet all the great exigencies, Medical and Surgical, of its district, and to be a Centre of Medical Experience and Knowledge.

Secondly—A Provincial Hospital is to be to its District a Model of Sanitary and Œconomical arrangement.

In the same way the Hospital is to be looked up to as the Type of all Scientific Hygienic appliances and of useful œconomical arrangement; for instance, of Ventilation. All Hospitals are not however agreed on the propriety of this. Gas was lately

* It has been earnestly pressed on the Hebdomadal Council, in order to avoid this loss of power, to divide the Clinical Professorship, hereafter, among the Physicians, or at all events to divide it into two. But that body, I am told, has no power to make such a change.

introduced into the Radcliffe Infirmary: some of the Medical Staff—and others—signed a protest against its introduction without proper Ventilating Flues: partly on the general ground of impropriety: partly on the ground of the public duty that the Hospital should in such things be a model of Sanitary arrangement. But the votes decided the other way: so that there is a ready answer when, in this part of England, Ventilation is asked for in workshops or sleeping rooms—"at the Oxford Infirmary the introduction of Gas into wards used both for sleeping and living was discussed; and it was settled that it might be introduced, and that Ventilating Tubes were unnecessary *."

The County, on the other hand, decided on adopting the most elaborate means for Warming and Ventilating the County Gaol; and that Institution must be referred to, and not our Hospital, for appliances of this nature. When indeed the same standard of internal perfection which has been aimed at in our excellent County Prison, has been provided for the sick poor of the district, we may hope to see efficient and equable warmth and Ventilation; a more extended garden for those approaching to convalescence; and a large covered and warmed airing ground for the treatment of pulmonary diseases, which abound in some portions of our population; a safe place for contagious disease: separate wards for special diseases: and a clergyman resident on the premises.

In another particular also a Provincial Hospital may, by very small means, effect great results, I mean by instruction in the Kitchen. It is needless to pourtray the unimaginative character of common English cooking. Where a Frenchman, a German, or an Italian can luxuriate, an Englishman will grow thin. Various books have been written to remedy this misfortune, culminating in M. Soyer's elaborate volumes. In no department of this branch of Chemistry applied to the arts are we more signally behind our age than in that of Food for the Sick. It is a very few years, not ten, since, in a well known Hospital, every patient had on Christmas-day roast-beef and plum pudding, followed probably by senna the next day. It was thought a fanciful innovation at the time that a young Physician suggested that jelly, or fish, or any other delicacy might, for just the same cost, be given in honour of the Christmas festival. A similar inelasticity pervades the whole culinary ménage. A Hospital might be maintained for less cost with more culinary resources; and the women would learn to value what they would see in practice to be as advantageous as pleasant. It might be made, with very little trouble and with great advantage, a part of the duty of the Hospital kitchen to teach girls and adult females, whether inmates of the Hospital or no, the essentials and the varieties of a sick dietary, and the other forms of useful and economical cookery. In almost every Town a Lady might be found who would undertake to superintend this department

* See Appendix C.

with no charge whatever to the establishment. What would be the gain to the agricultural and labouring population of such a district as this, what the amelioration of hundreds of cottage hearths by this slight addition to the objects of the Hospital, many benevolent persons will at once appreciate.

Thirdly—The best manner of providing for the Inmates of Hospitals.

Under the third head, the Best Manner of Managing the Sick, under whatever aspect they may be considered, are evidently contained questions of the most serious importance. I must crave forbearance from persons of various opinions while I endeavour to place the matter in a clear light, from the point of view in which it presents itself to me. This is undertaken with the more readiness, because there is just now a new feeling springing up in England on the whole subject of Hospitals and their Nurses: and there is much risk of misunderstanding, and consequent loss of power among the numerous philanthropists whose interests are engaged.

The great question which is fundamentally at issue between those who desire to alter the character of our Hospital Nurses, and of our Hospitals, and those who think that upon the whole they are very well as they are in England, is this, Are Hospitals institutions for the mere relief of human suffering? or, Are they religious houses in which our fellow men, treated with all the warmth of Christian charity, are to receive spiritual consolation and such medical aid as they require? In other words, to push the difference between the two views to the extreme, Are they places for the benevolent application of science? or, Are they Christian families, into which the Physician is called at the need of the inmates?

However it may be with other men, I heartily sympathize with both these views. I can take extreme delight (I can use no other word) in the mere scientific application of the Healing Art, in all the dry routine of a vast Hospital, where the Student and the Surgeon may for days and weeks exchange no other idea with the scores of his patients than those which relate to their vital changes, and their pathological processes; where the man, and his bed are known as No. 14 or 15, and his death thought of only as the end of the case: in all this, I say, I can, God be thanked, take extreme delight. It is the honest expression of earnest minds devoted to a noble purpose, with a zeal that knows no flagging, a heartiness that feels no daunting. It is that temper which has helped to make the Arts of Medicine and Surgery the boon to mankind which they are; which scorns all meanness; which courts all publicity; which yearns after truth for the truth's sake; and which at once sharpens the intellect, and strengthens the practical purpose of every nature that is noble enough to be ennobled by it.

And yet, on the other side, it must be admitted, that, with all this that has been said, great evil may be compatible, and has existed. The teachers may be lax and worldly; the students dissolute; the servants corrupt: it may, it need not, be so. I doubt not but that round the Hospitals of Europe there have, in days gone by, been gathered habits of vice; but, speaking of what I have seen myself—I can do no more—I think many prevalent notions concerning Medical Students and Hospitals, unjust and unfounded. I wrote so when a student at a London Hospital: I repeat it with a much larger experience now.

"Some persons, indeed, suppose that Medical students are different from other men; and many hard things have been bandied about at our expense. I have heard their necessary occupations in the dissecting room, and their studies in the hospital vilified; the very means, that is, which in patience, in doubt, and in difficulty they pursue, that they may confer health and its blessings on their neighbours; and, which is prodigious, the charge that usually crowns the rest, is, that they really take pride and pleasure in their pursuits.

"Experience has, moreover, shown me, that the world has not been in this matter charitable above her wont. The question ought not to be, whether we are bad men, and want control, for that I doubt not; but whether we are worse than other large bodies of young men. *Considering our disadvantages,* I speak only of what I have seen, I think not*."

With respect to the Nurses especially, I am most anxious for an opportunity of publicly testifying, that as far as I can recollect, having been in the wards as much and at as various times as any student of my age, I have never heard a nurse say an improper thing, or saw a nurse do an improper act. For aught I know, many have been dismissed for various misconduct during my pupil days; and no doubt were so: but I may further say, that, of all the nurses I happen to have known, the three persons I would rather have in my house, in the case of any grievous illness befalling me or mine, are or have been all of them hospital nurses.

So much however is known of our ordinary English Hospital system, that it would be idle in me to describe it. It is like most other things in England, neither perfect nor bad. As mere Medical institutions, I suppose them not to be surpassed. Through the devotion of our Chaplains† and other religious visitors, much is done for the spiritual, and intellectual, and moral care of the inmates; much more is done in foreign countries, and more can be done in this: the question is, had it better be done?

The simple way of answering this question is, to remind the reader of the mode of working in a well known institution, often held up as a model for imitation: I

* A letter from a Medical Student on some Moral Difficulties in his Studies, and on the Duty of the State to aid in lessening them. Rivington and Churchill, 1841.

† I cannot speak of Hospital Chaplains without recording my debt of gratitude to the Chaplains of St. George's and of Guy's while I was a student in London.

mean the establishment of the excellent Pastor Fliedner at Kaiserswerth; one which certainly any one, desirous of practical information on this aspect of a Hospital, should visit. It may of course be said, that Pastor Fliedner's Hospital is really founded for the purpose of training his Deaconesses; and yet this is no objection. It is a Hospital worked on the plan of a religious institution. It will be borne in mind, that the very essence of this indefatigable man's work is to show that such a Charity can exist among Protestants; and that he has no reason to doubt this, from the extraordinary success of his work, will, I believe, be readily allowed. His Deaconesses—persons of every rank—agree to remain for a certain time, are at liberty however to leave if they will; and serve without money reward*. Ladies of noble birth are among his Sisters; women of the humblest origin, and the meanest education, are equally available. Each understands the whole routine of the house; but each finds her vocation in that for which her previous life and her qualities the best fit her. I imagine no one doubts the reality of the benefits conferred. The character of the medical and surgical treatment must of course depend upon the officers who accept or are appointed to the respective duties.

It is impossible to go round the wards of a Continental Hospital, in which Sisters of Charity perform or superintend the work of the house, without feeling that they inspire into the sick rooms an air of cheerfulness and of comfort which cannot be surpassed. There is a charm in that which is done for love, which cannot be purchased. They who are paid may, of their free will, bring the law of love to their work; but, as a general rule, the love of the shepherd, and the work of the hireling have each their distinctive mark. Whatever faults in the conduct of the people; whatever grave errors in the subjugation of their will; whatever falsehood in the dogmas of their teachers, it must be owned that the Religious women of the Continent have the art of tending the sick, and caring for the orphans. There is no sight more touching than to see dense rows of young children rising tier above tier in a crowded schoolroom, that stands in the heart of a crowded district of our large towns; the sunk eyes of sickly and inattentive children; the pale and eager faces of those intent and able to learn; the marks of poverty and domestic suffering that may be read in their dress and their general bearing; the harassed and careworn face of a young government master, who has tasked himself beyond his strength to gain a precarious but honourable position: nothing, I say, more touching in one aspect of human life, except only in another view of it, to see in some foreign Orphan-house a high-born Sister playing with her self-appointed orphan charges; with every appliance that her religious notions suggest;

* They have only sufficient to obtain their clothes.

with every charm that her manner may impart; with the most entire perception of the weakness of her charge, and of the variety of methods of cheering, soothing, training them in body and in mind.

It is quite impossible, I think, for any unprejudiced person to see and compare these two sights, without feeling that we have something to learn of the manner of tending the sick, and rearing the young among our poor.

If, in the present section, any single suggestion were to be offered, especially to Provincial Hospitals, it would be the having attached to them a Residence for a Married Chaplain. In some institutions he lives far from his Hospital, and has other duties*. It cannot therefore be his home. If the Chaplain and his household be part of the Institution, and himself a man of earnestness of purpose, and ability and judgment equal to his office, his residence at his Hospital would probably bring all of spiritual, intellectual, and œconomical advantage which the English mind will approve or can attain. Such a person, as the Governors would be likely to appoint, would check all the novelties and fancies which the well intentioned, but inexperienced, might desire to introduce: while he would bring about all that his own office, or the tender watchfulness of his wife, might suggest of real pastoral and temporal good, to the many ignorant and uncultivated people that would pass under his care.

In a country where so many excellent Subscriptional Hospitals exist, it may seem to have been superfluous to narrate what has been just set forth. It is however of great moment that these principles should be clear in the minds of the subscribers, and that they should not be lost sight of. The whole fabric of Voluntary Hospitals may be endangered, if even one Hospital were to fall short of them. The way this unfortunate result may be brought about, and the consequences that would ensue, may thus be briefly stated.

The State reasonably requires of its Institutions, by whomsoever founded or conducted, that they fulfil their work; and in the event of their failing, the genius of the day places them under State protection; takes away much of their voluntary character, or appoints State Institutions in their stead. This process might very soon take place in all Medical and Sanitary Institutions. England has become what she is mainly by private and local voluntary exertions. But her Government, alive to her great needs, intends to see those exertions rightly directed, and equal to her emergencies: or to place them under Central control: this may be an evil, but it is a much less evil than shortcoming. The true wisdom lies in our making all Local Institutions rise with the increasing demands of a growing population

* At the Radcliffe Infirmary the income given to the Chaplaincy is divided between two Clergymen, who visit *on alternate months*, neither being residents. In four years we have had three elections to the Junior Chaplaincy.

and advanced civilization; in our determination to make them each year fit representatives of the knowledge, wisdom, and science of the present epoch, such as they were at the day of their foundation.

The General Board of Health, in their Instructional Minute issued in 1854, discouraged the multiplication of Hospitals for the reception of Cholera Cases; but they advised that wherever there is a General Hospital, in a Town, conveniently accessible, arrangements should, if possible, be made with the authorities for the reception of necessitous Cases. Whatever applies to Cholera will apply to other Epidemics; such as Scarlet Fever, Typhus, and Small-pox. The request is most reasonable.

The amount of inconvenience, not to say risk, which small families undergo when their only servant, or one of a small number is prostrate with Fever, or other infectious disease, can hardly be appreciated by those who have not experienced it. If the General Subscriptional Hospitals cannot relieve their Towns of the danger and discomfort of such Cases, assuredly accommodation will and should be provided by the Guardians; or by order of the General Board of Health; or by some other compulsory demand on the rates. If the Guardians, during an Epidemic, are compelled to erect a Hospital, they assuredly would not remove it when the Epidemic is ended. They would foresee the need of such an Institution; they would keep it standing; probably use it; and gradually receive into it persons afflicted with other urgent disease: a Staff would grow up round it; arrangements would be permitted by which the poor of other unions would enter it; then patients would be admitted on payment; and the Voluntary Hospital would necessarily decline in funds and fall into desuetude.

If the two Hospitals were equally good, there might be nothing to lament in this: but other circumstances are intimately mixed up with any organic social change such as this. These consequences are viewed by one person as the greatest advantage; by another as one of the greatest evils.

With respect to Subscriptional Hospitals, the case is this: I have met persons who wish to see Hospitals supported "out of the Rates:" they view in that the transfer of influence from the Aristocracy and the Gentry, and the Clergy, and the wealthier parts of the community, the present maintainers of the 'Charities,' to the will of the greatest number of the voters: they see in that change, at all events a blow to classes they dislike, and a possible obscure gain to themselves.

In this change there would be a disruption of many ties; opportunities of kindness lost on one side, and of gratitude on the other; and duties of charity transferred to the call of the collector. Hear what an eminent French writer says, who has made England his especial study.

"L'opinion est encore d'accord avec la tradition pour imposer au sujet Anglais le droit et le devoir de travailler et de prendre de la peine dans l'intérêt du bien général. * *

"Les premiers intérêts de tout peuple civilisé, l'enseignement, la charité, la police, plongent leurs racines et puisent leur séve dans l'intarissable réservoir des volontés indépendantes et des sacrifices spontanés de vingt millions d'âmes Chrétiennes.

"L'Anglais donne son argent, son temps, son nom à une œuvre de charité ou d'intérêt public; il met sa gloire à ce que l'œuvre qu'il adopte ainsi soit au niveau de tous les besoins et de tous les progrès; mais pour y parvenir il ne songe pas à invoquer ou à accepter la main mise des agents du pouvoir sur tout ce que ses pères et lui ont fondé. Il garde l'autorité avec la responsabilité, le droit avec le devoir. * *

"*Supported by Voluntary Subscription:* telle est la fière et noble inscription qu'on lit dans toute l'Angleterre sur la façade de la plupart des hôpitaux, des hospices, des asiles divers de la misère humaine. Alors même que le governement a pris l'initiative, le public est toujours venu revendiquer sa part et son droit: *condidit rex, civium largitas perfecit*, comme il est dit sur la façade de l'immense hôpital des aliénés de Bedlam. On comprend bien que ces mots: *entretenus par des souscriptions volontaires*, impliquent ceux ci: *gouvernés par l'autorité des souscripteurs.* C'est toujours le même principe: l'effort, le sacrifice personnel et permanent, puis le droit et le pouvoir naissant du sacrifice et de l'effort. *Tant que ce principe sera en force et en honneur, l'Angleterre n'aura rien à craindre*."*

There are four other points which the observation of some years induces me to suggest to the consideration of the Philanthropists of this and other Cities which may be in circumstances similar to our own.

Serious Disease the true claim for admission to a Hospital.

The professional services of a Hospital are mainly without emolument; and cheerfully and thankfully rendered: therefore the work should be made as light as is consistent with its being done with efficiency. In some Hospitals the senior medical officers take the in-patients, and there are junior officers who take the out-patients. Here in Oxford all have charge of out-patients. I am inclined to doubt whether this is a wise arrangement; and I believe it would be far better if the two senior Physicians had the in-patients, with each a Clinical Professorship, and the junior had the out-patients. On this there is much to be said on either side. Next, it may be doubted whether in Oxford it is necessary that there should be any Medical out-patients*. I believe that, considering the fact that far more attention is exacted than formerly from the Union Surgeon,—liberally administered as the Oxford Union is in this particular,—that there is an excellent Subscriptional Dispensary, with a paid medical officer to attend the poor at their own homes, it may with confidence be said that the poor can be better cared for in the City by the Union or Dispensary Surgeon than they are as out-patients at the Hospital. With respect to Medical out-patients from the Country, I am convinced that many

* L'Avenir Politique de L'Angleterre par Le Comte de Montalembert, p. 255. éd. 2de.

* This does not apply to In-patients discharged relieved.

derive great injury from journeys to Oxford in inclement weather; and that they come to and fro, when it would be better that, rather than do so, they should have no treatment at all. I will not venture to speak of other Towns, especially the large Towns of England, and still less of London, which is quite exceptional in this particular; but I am satisfied that in this and the surrounding Counties, considering the excellent Practitioners who hold Union appointments in them, Country patients should be discouraged from coming as Medical out-patients to Oxford as much as possible. Further, that if the Subscribers to the Hospital, after calmly reviewing the whole circumstances of the Country, the improvement in the Poor Law, and the higher education of the general Practitioners in country districts, should then conclude that out-patients' orders for Medical cases should still exist, it would be far better to have *one Form of Recommendation*, and to let it rest with the Physician of the week to decide which cases should occupy the beds, and which should be out-patients. It is certain that in our Hospital it constantly happens that many of the Recommendations should exchange hands: that persons come with in-patients' orders whose cases are far too slight to justify their occupying a bed,—but it is invidious to refuse them: and that poor creatures come with only out-patients' Recommendations, whom it is a source of misery to see return home. The Recommenders judge often by the comparative importunity—the Physician by the comparative necessity of the sufferers.

There may be evils in 'Free Hospitals' with which I am unacquainted; but the friend of the poor will endeavour to break down every obstacle to the freest admission of the worst Cases of disease at the shortest notice. Serious disease is the true ground of admission to a Hospital. It is sometimes said, that, if this principle were allowed, Subscribers would lose the patronage given by their subscription; and that all manner of "Parish Cases," Fevers, and Inflammations, &c. would get in. I do not believe Subscribers are influenced by so mean motives as this implies. They maintain their Hospital as a public good, and take pride in it: and it is my firm belief that, the more practically free a Hospital, the more severe would be the cases that come thither; the more good would be done, and the more munificent would be the Contributions. This applies to the Diseases of Children as well as to those of Adults: for no County Hospital is complete that has not a Childrens' ward.

The Labouring Poor not the sole Objects of Charity for a Hospital.

There is misunderstanding often as to the Nature of Poverty. To earn less than is sufficient to enable a prudent man to obtain a livelihood in his business is poverty: to have more than a man need expend, is comparative wealth.

There is no class of persons more poor than they who, having small salaries, are

required to dress well to keep their situation, or who need books, or other matters which are costly. I may be excused for instancing teachers of various grades—of either sex.

Now all such persons are ruined, as the world has it, if they have aid from the Parish, or if they go to a Dispensary. They therefore are most fit objects for whom to provide aid; but their address, education, and appearance is often a hinderance to their being aided in distress. Such persons have sometimes small means which they would gladly apply to aid their treatment. For Chronic Diseases of Females especially this would occur. For the reasons before named—the increased care of the poor—it would be exceedingly desirable for our Infirmary, and other Hospitals, to take in persons of education and small means, on payment, and in a separate ward. I have been myself an in-patient in such a Hospital in Rome; and ever grateful shall I be for the kindness I received there. I was in lodgings; alone; ill; far from any attendant. A dollar (four shillings), a day was the sum paid by me for a separate room, and the supply of every want. This sum amply repaid the Institution. The more satisfactory to the recipient who could pay it. The comfort, independence, and freedom from care which single men and single women would feel if they had this course open to them, without loss of caste, are not to be described in words*. To draw up details of such a scheme would here be out of place.

On the necessity of providing Nurses for the Poor.

Far more important than a revolution in Hospital Nurses appears to me the obtaining Nurses trained and qualified to attend the poor at their own homes†. There is no object more requiring the energy of the benevolent; none more certain to repay their exertions; none more easy of execution. A very moderate Subscription, the cooperation of Guardians, the consent of the Governors of Hospitals, with the aid of the Parochial Clergy, might at once obtain for every town a corps of Nurses, such as we had at Oxford at the time of the Cholera. A Lady, resident here, is willing to undertake the organization and superintend such arrangements for Oxford. A body of more or less competent women would then be ready at all times to wait on the sick poor. They might at once effect good in various ways. Their knowledge of cooking alone would be a positive boon, supposing always they had been properly instructed, as has been proposed, at the Hospital. The more able of them would in time become trained Nurses for all classes; they would be known and certified. This would probably have been attempted here had not the

* In London there is more than one Institution of this nature.

† In Sussex a society has been formed with a similar object for country parishes; in them Nurses are much needed. Information concerning it may be had of the Rev. W. M. Blackwood, Rotherfield.

Cholera Nurses, for the most part, gone out to the Crimea, and had not other circumstances delayed the public proposal of this plan. What can be effected in Oxford, can be effected elsewhere. Persons might come hither for instruction from parishes in Oxfordshire and the adjoining counties. In connection with every Hospital, through the kingdom, such an institution might soon exist, to the great advantage of every class in society, and to the maintenance of many respectable women, and especially of widows.

The benefit of such an organization is so apparent, that I need not say more on the subject; but only suggest to the reader, the boon that it would be during the prevalence of Epidemics of whatever kind*.

On certain points in Female Penitentiaries.

There are several questions which this section invites us to discuss; among others the unsatisfactory character of some of the Regulations in Medical 'Clubs' or Benevolent Societies: wherein, I am informed, the medical adviser is sometimes remunerated at a rate which does not pay his outlay for medicine. But this and others I must pass by, to name one topic of grave importance—the admission of Fallen Women into General Hospitals. From our Hospital all venereal cases are excluded. This is an intelligible rule, and is to be strictly observed. No woman of known bad character is admitted there: all therefore can safely send young women in whom they are interested.

Then what follows? we have no "Lock Hospital." A few years ago, when I was beginning practice, a young woman in an agony of suffering appeared at the Infirmary. The case was a forbidden one. She must go away. She expressed a willingness to go to the Penitentiary. I applied there: she could not be received. She had an acute disease. She remained in the street; and finally found her way to the foul ward of the Workhouse. A Lady going, from religious motives, to visit her, was refused admittance.

* The Epidemiological Society (13, Upper Brook Street, Grosvenor Square,) has laboured to promote the supply of Nurses to the poor, through the medium of Workhouses. Various applications have been made by the Committee of the society to the Poor Law Board. There are difficulties in the way of the proposed plans, which at present are insuperable. But the object and the design are really excellent. I am disposed to think that a Voluntary Association in every town or union, aided and supported by the Guardians, would, in some respects, be far better. At all events, until the Poor Law Board do undertake the plan, it is earnestly recommended to the attention especially of the WOMEN OF ENGLAND.

I take this opportunity of remarking on the great inconvenience and distress which sometimes arises here, from the want of a place to which insane persons, not paupers, can be sent on *immediate* notice. The Warneford Asylum has a weekly admission day.

Well, then, these wretched women, when, pressed by sickness and suffering, they would return, cannot. In the Hospital they may not be treated: they must be thrust with their fellows into a proscribed ward in the Workhouse, and be hardened. Our Penitentiary, when urged, took the noble course: all honour to it: it agreed to receive them well or ill. The numbers have increased to overflowing; and a New House and more Funds are wanting. If this meet the eye of a wealthy man, let him be assured he can give no sum that is not needed, and will not be used.

Now I do not say that all Penitentiaries should do this. I think not. Two classes of Penitentiaries are wanted: the one where women are received: the other where they are kept. In the first, they should be taken in any state of disease: in the second, it is better that they should be in health. On this point I can have no doubt. The two establishments may be under the same management: or in concert with each other in different localities—as Oxford is with Wantage, and elsewhere. The receiving houses may be small. A Penitentiary for discipline cannot be conducted on a very small scale. A large ship is more easily managed than a small one.

With these brief considerations the present remarks on the working of Voluntary Medical Institutions, in Oxford and probably in some other Towns, must be brought to a close.

The chief points which have been brought forward for the consideration of those interested in them are—

1. The nature of the claims on the State for Medical Relief.
2. The duty of the State to see that there are efficient Medical Institutions in every County or District.
3. The great disadvantage to the Country if the State Institutions supersede Voluntary Institutions—
   - As Centres of Medical and Surgical Practice,
   - As Standards of Scientific and Hygienic Knowledge,
   - As Safe Receptacles for Contagious and Epidemic Disease.
4. The desirableness of receiving, upon weekly payment, certain of the Middle Classes into private wards and apartments provided for them in connection with the County Hospital.
5. The revision of the mode of admission to some Hospitals, so as to ensure that those only enter the Hospitals who truly need it; and that none are Out-patients who cannot be *thoroughly* treated in that manner.
6. The duty therefore of zealously supporting Dispensaries, by which the classes above "Paupers" are visited at their own homes, as a much truer Charity than the Out-door advice of the Hospital.

7. The making the Hospitals serve as Instructors in Nursing, and in the art of Cooking economically for the Sick.
8. The endeavour to use them, as far as possible, as means for Moral Instruction and Spiritual Improvement to the inmates. This view need in no way interfere with their thorough efficiency as Scientific and Medical Institutions: but cannot be effected without engrossing the chief energies of the Chaplain.
9. The preparing lists of persons willing and qualified to serve as Nurses among the Poor; to organize them so as to be available in Epidemics, and at all other times; and through the agency of such organization, to give them all instruction calculated to make them efficient aids in sickness.
10. The providing in all Towns where there is need for it, special means of treating penitent women: 1st. That they may be kindly dealt with in their sickness: 2nd. That there may be no excuse for admitting them into the wards of the Hospital.

Those that have thought of the questions touched on in this section, and who have successfully conducted the Voluntary Medical Institutions, which are among the chief glories of our nation, will bear with a meagre but hearty acknowledgment of their labours: they will heartily desire to see the time when the Government shall find no need to inquire into Charities, because they are perfectly administered; and will be spared the duty of controlling Subscriptional Institutions, because they are a model to those of the State. Until that time, they will earnestly wish that the administrative talent and the large influence which exists in every County in England, should jealously provide that the Voluntary Institutions, which watch over the temporal necessities and bodily infirmities of the honest and labouring poor, shall in nothing fall short of that perfection which various Institutions for the punishment of Crime or the reform of the Criminal have in their district attained.

CHAPTER V.

On the Connection between Mental Cultivation and Physical Improvement.

Upon the judicious Education of the people depends, more than on any other human means, the destiny of our country. God be thanked that each year some ground is gained in the strife against the social evils that sometimes bid fair to overwhelm us. But as long as a large part of our population are, in respect of one or more of the three great portions of their earthly nature, the Physical, Moral,

and Intellectual, so much lower than they might be, the public opinion, which rules in a constitution such as ours, must be frequently in error; and the greater good must for a time too often yield to the less. The discussion which is caused by the conflict of opinion is nevertheless one of the most efficient means of judicious changes, and of real progress.

To aim at, to hope, and to pray for Physical, Moral, and Intellectual perfection in any given state is not perhaps the part of the wise; but to look for a uniform progress towards all three in his own country and his own place, to strive to add his pebble or his stone to the rising edifice, is the duty of every true-hearted Christian man. The three cannot be separated. I have no more hope of raising a high moral and intellectual standard in a state inconsistent with our physical necessities, speaking of masses of society, than I have of seeing much physical improvement in districts where the moral and intellectual life is dormant. God be thanked, there is no nook of this country, none where our tongue is known, but that there the voice of a higher culture and a nobler aim is heard, uttered however feebly, yet in some sort uttered by our teeming press. For this City, our special care, it is no Utopian idea to entertain the hope, that as far as a place, without manufacture and trade, can be esteemed a type of society at all, this may be made one which can be a model of a community living in the greatest possible amount of physical comfort, moral well being, and intellectual light that England can show; and if, with our large proportion of cultivated minds, warm hearts, and of persons placed above want, this cannot be so here, I know not where on earth we shall turn to seek it. The germs of such a condition are here. It is no dream that we or our children may see the ripened fruit.

Some highly educated persons however seem little aware by what humble means many of the best habits of mind may be formed in children. If such had ever associated with mechanics, they would have learned that in many or most mere mechanical trades the good workmen are all distinguished by some valuable moral habits: which, however they may be hindered by some personal obliquities from exercising their influence over the whole man, are yet in themselves excellent, and *capable* of leavening the whole character. A good carpenter or a good smith will not do bad work. His master may try to make him do bad work, for the master's main business is to sell whatever will find a market; but the good workman will not do it; he would rather do what hurts his whole soul—do nothing, and see his family in distress; or work for less than he is worth; either of which wears his heart out by the sense of injustice. In short, he must be *Accurate* and *Truthful*. With the squareness of his work and the straightness of his line are intimately connected his notions of right and wrong. The good workman is *Humble* withal; he knows the struggle good work has cost him; and his satisfaction in it is mixed with a sense of

his own feebleness in respect to all good work, and all higher work which he cannot himself do. He is *Charitable* and *Helpful* to others, because he has a fellow feeling with all who strive as he strove; and he desires that all good work should prosper, as he wishes that all bad should come to an end. He is *Noble*, because he feels himself to be a part of the whole army of workers who from the beginning of the world have striven in all Arts, and all Times, and all Places to do their duty in the station of life in which they have laboured. If I have to excuse myself for such a digression, my excuse is twofold: 1st. I think that these truths belong really to all work of whatever kind; and, 2ndly, that just now it is of especial consequence to bear them in mind. I often think of Keble's lines in respect of all work—

> The trivial round, the common task
> Will furnish all we ought to ask:
> Room to deny ourselves . . . .

I never look but with reverence on the features of an aged carpenter, now fourscore; with whom, encouraged by the family laws of my father's house, I used to work in my boyhood. I first learnt to read in his work and at his bench what I have now related; and never, as a child, saw him at his work, but that I felt the nobleness of labour, and saw in his conscientiousness germs of the principle of martyrdom for truth's sake: indeed it is by the observation of such ways and by such associations for good and for evil that many of the first notions of our children are formed, their powers directed, and the *quality* of those powers established.

The advantages of a higher kind of knowledge, beyond mere mechanical knowledge and mechanical skill, lie in great measure in the developement of the same qualities by means of a higher subject-matter; they therefore raise the whole man, but are not necessary for the development of the qualities in question any more than a knowledge of dogmatic theology and patristic lore are necessary to the formation of the spiritual life of a Christian. And besides, in every kind of progress, a risk equal to the good attained is run—an almost universal condition of all attainment in this life of barter and trial.

Once more, it is quite wrong to think that the principle at the root of all this is not of universal application. The principle is constant, but the cases, to which it is applied, vary. Even in questionable occupations, that is, occupations in which there is a greater risk of evil than hope of good, there is always the chance and possibility of discipline; as, for instance, in field sports. Every one knows the rigorous conscientious habits of a true old sportsman, as distinguished from the luxurious young one who has his gun carried and loaded for him. Men have diversities of gifts: some have one power within them, some another; but in all the gifts and in all the operations there is a "spirit" to lead to good, as there is a power to degenerate to evil. If a man *can* only take a pleasure in dogs and horses, let him

do so: shoot well and hunt well: and go to the Colonies. There the natural gifts which made him hunt well here, will make him rough it well there with rough natures of men and things; and be of infinite use to his fellow men there, and prove an Honour to his Country: but by no means let him be a barrister or a physician. So it is throughout. The training for life is as various as the modes of life. All subject-matter, and all modes of life rightly used, become the means of true education. Dr. Chalmers, thirty years ago, advised the teaching of Political Economy and of Natural Science to the working classes; because, he says*,

"There obtains a very close affinity between a taste for Science and a taste for Sacredness. They are both of them refined abstractions from the grossness of the familiar and ordinary world; and the mind, which relishes either, has achieved a certain victory of the spiritual or the intellectual, over the animal part of our nature. The two resemble in this, that they make a man a more reflective and a less sensual being than before. * * *

"For this purpose, it is not one, but many kinds of scholarship that are effectual. Whatever may stimulate the powers of the understanding, or may regale the appetite for speculation, by even that glimmering and imperfect light, which is made to play in a mechanic school among the mysteries of nature; and may unveil, though partially, the great characteristics of wisdom and goodness that lie so profusely scattered over the face of visible things; or may both exalt and give a wider compass to the imagination; or may awaken a sense that before was dormant to the beauties of the divine workmanship, and to the charms of that argument, or of that eloquence, by which they are expounded; each and all of these might be pressed into the service of forming to ourselves a loftier population. Every hour that a workman can reclaim from the mere drudgeries of bone and muscle, will send him back to his workshop and his home a more erect and high-minded individual than before. With his growing affinity to the upper classes of life in mental cultivation, there will spring up an affinity of taste and habit, and a growing desire of enlargement from those various necessities by which the condition of a labourer may now be straitened and degraded. There will be an aspiration after greater things, and the more that he is fitted by education for intercourse with his superiors in rank, the more will he be assimilated to them in a taste for the comforts and decencies of life. In the very converse that he holds with the lecturer, who one day expounds to him the truths of Science, and another day examines and takes account of his proficiency, there is a charm that not only helps to conciliate him to better society, but that also familiarizes him, in some measure, to the tone of it."

Dr. Chalmers was one of the hearty genial able men who could see the good side and the capabilities of every thing; and he was not a man to fail to perceive the value of Physical and Social Science. The resistance to his enlightened views armed noble weapons with a poison, by handing them over not unfrequently to men who had not his moral qualities, and who did not feel, as has been said thousands of times, that the educational value of the material means was not in the knowledge they gave, but in the discipline they imparted. Accordingly even the much vaunted Physical Sciences have failed over and over again in their use; out of most accurate, most ennobling studies, popular scientific exhibitions have furnished to thou-

* Christian and Civil Economy of large Towns, vol. iii. p. 378, and p. 383.

sands, only a new form of excitement, and another occasion for inaccuracy. From this evil however, or rather with it, much good also has sprung: and now, here in Oxford, as in many other places, persons of all classes are beginning to find the futility of inaccurate science and of popular lectures, except as a means of creating and fostering interest in what is good; and they see the necessity of closer, more precise, application to those subjects with which each individual mind feels a natural sympathy. Here we are many years behind Edinburgh and some other towns in these respects; but our people will not lag: it is not speaking with over confidence when it is said, that ere long, with the influence of our New Museum, of the Working Men's Institution, the Free Library, and other appliances, the younger part of the population, urged on, with a patience almost inexhaustible, by the blessed impulses that are stirred up in the nature of every man, will glide insensibly into a stream of Knowledge, such as our fathers knew not of; and over which they may pass safely, if guided by the Spirit of Wisdom, as well as the Spirit of Understanding and of Knowledge*.

But then I am forced to confess my belief, that the kind of Training by Work and by Science, to which I have alluded, is not adequate to bring about the Happiness of any Society. Indeed, whatever theoretical opinions there may be on the nature and credibility of the Articles of the Christian Faith, no man hardly, who has prospered in his undertakings, is inclined to doubt that Christianity has added happiness to man just in proportion to the sincerity with which its faith has been held, and the tenderness of conscience with which its maxims have been obeyed: and no woman, who is a mother, and whom her sex or ours would admit to have discharged her functions so as to obtain their approval, would be found to say that, as far as the multitudinous chances of this life will permit, there was any method so sure for bringing about the happiness and worldly prosperity of her children as an early Christian training†.

A part of Christian discipline is termed, by some teachers on such subjects, the law of self-sacrifice. If there be one thread that seems to interweave itself, and disperse its hue over the whole of our life, it is this: we are not for ourselves. The history of our universe tells the tale—the meanest things on earth reecho it. All things exist for others besides themselves: elements for compounds; inorganic elements for organic existences; the lower forms of life for the higher; the higher for man; man for his fellow-man, and for his Maker. The great cycle of chemical changes that go on through the world, touches, as it were, at one point, the nature

* These were to be the Qualifications of the *Workmen* of the Tabernacle. Exodus xxxi. 3.

† Any one not acquainted with the Work will thank me for referring him to Kay's Promises of Christianity.

of man, and so through him serves the great end of all, the worship of the Creator of all. Within the vortex of human duties and human destinies, there is a collision as endless, a sacrifice as continuous, a reward as great. If the inorganic elements are wrought into higher compounds, and the lower forms of life fall before the growth and the necessities of the higher kinds, so individuals among men continue to effect that for which by themselves they are powerless; lower intellects are subservient to the more gifted; whole races sink before the advancing tides of others destined to speed the great Progress of Man.

In a more narrow view of society, the same self-sacrifice is the law of life. The surrender to duty of all that is dearest, and the yielding to that duty with joy are the means by which, on a small scale or on a large, great moral steps are made. Of this training, and the struggle that it costs, all partake. All obey, resist, or slip meanly by. They who escape the contest have no certain honour among men—no peace in themselves. In them is no Spirit of Content. The child that has learnt the principle of obedience, and of faith its cornerstone, that has grown up in it, has looked for his reward beyond this world rather than in it, that has the settled purpose of preferring duty in all things to his own desires, that, in a word, follows the guidance of the Gospel,—that child grows to be a happy man, blessing, and blest. All things that can take root in him, bear fruit according to his opportunities and his powers. His intellect expands, if intellectual developement be his sphere; but it expands harmoniously: his handywork, if handywork is his lot, is good work—work that satisfies his own love of truth, and the need of his employer: whether the growth of his intellect or the skill of his hands be his aim and his duty, his affections and his passions are warm, but under the control of his reason.

Nothing can compensate to the man for the loss of such culture: without it his intellect, however furnished, his manual skill, however applauded, leaves him sorrowing in heart—dissatisfied, restless; if opportunity of power occur, makes him a man dangerous to other men. Seeing all this to be so, philanthropists and mature statesmen have, for the most part, declared that all Education, to be complete, must also be Religious. But in what sense, and how to be attained, has been yet, as a Great National Question, an unsolved problem.

The reader may, before this, have asked himself in what manner this apparent digression is connected with the subject in hand. But it is a principle acknowledged, I presume, by all persons who have thought on these questions, that the improvement of the people depends on the combined elevation of their whole nature, as well as on the amelioration of their surrounding circumstances. Accordingly every one who feels it to be his vocation to aid or to strive to aid in promoting the health or increasing the material comfort of the community, must force himself to a conclusion on the mode of training their moral and intellectual powers. We in Oxford are most especially bound to do this; not only on account of the Educa-

tional character which belongs to our city, but also on account of the dissatisfaction which has been loudly expressed at the real or supposed shortcomings of the training provided by the University. They who have continually assisted in bringing about some of the additions to our studies, must have done so with the view of either improving or removing the old instruments of Mental Discipline. They who have insisted on enlarging the means of Intellectual Culture, by the introduction of the Natural Sciences, and the expenditure of large but ill-afforded sums on the appliances of Physical Knowledge, must have done so either because they wished this Natural Knowledge to supersede the study of Language, History, and Mental Philosophy, or because they thought these three were, at this age of the world, imperfect representatives of the range of human thought, and of human achievement. Which of the two they intend they should declare.

It is without question that many persons here have earnestly endeavoured to promote the welfare of EVERY rational method of moral and intellectual culture; and have not allowed themselves to be, as it were, partisans of any circumscribed portion of mental culture: and this rightly: there are few now to be found who believe that an implicit and unintelligent reception of Religious Dogmas, or a mere Linguistic Scholarship, or restricted devotion to any of the Natural Sciences, would, apart from each other, be the best training for a man.

The tendency of our time seems to be to the exaltation of Intellectual Developement. This is well: but it is already discovered that this is not to be gained by attendance at Lectures only,—that something beyond is required for real Mental Discipline. Working Classes are therefore added to evoke the self-education which is necessary for all real mental progress. This is also well. By thorough application to any worthy subject of study, certain powers may be strengthened: by truthful, honest, accurate Drawing, by sound, careful, precise Musical exercise, vocal or instrumental, certain properties of sense, and certain valuable qualities of mind may, without doubt, be heightened and ennobled. By any of the Classificatory Sciences pursued practically*, powers of Observation, Comparison, Reflection,

* By this, of course, is intended practical, experimental study of practical experimental subjects, as opposed to mere verbal, book knowledge. It is extraordinary how frequently the necessity of attention to this is overlooked by both Students and Examiners. Our Natural Science School here will utterly fail in its use, if this be not kept constantly in view. In Chemistry, Physiology, Geology, &c. there should be no Examination without a practical testing of the candidate. The late Hebdomadal Board most unfortunately erased from a notice, prepared on this point, an invitation to Students to offer dissections for demonstration at the Examinations; but they have now, this year, been happily introduced. A Prize has been lately proposed for Essays with dissections of our Fauna, and no apprehension need any longer exist as to the efficient practical character of the School. It is intended to offer shortly a suitable Prize, with a similar object, to the Oxford Working Men's Institution.

Judgment are matured according to the original mental constitution of the student. By History, by true and philosophical investigation of Language, in connection with its origin and developement, all or almost all the faculties of which we are capable are called into play, unless we except the higher powers of abstraction, which are disciplined by Mathematical Studies.

It must, therefore, be a source of unceasing gratification to all who desire the happiness of their fellow-men, that every well conducted institution for the advance of knowledge should flourish. But it must not be expected *that this increase of intellectual power will make our homes happy.* What I have said on that head need not be repeated here: and we may come to the practical conclusion for which this almost tedious and trite summary concerning Education has been made.

Religious training lies at the root of the contentment and happiness of man. Intellectual cultivation is not adverse to Religious training, but is no substitute for it, and is become in our time a necessity to every one in his degree. Intellectual culture is nothing, except it have full play, unchecked by religious opinion: its essence is the unfettered search after truth. Religious growth is quite compatible with this, under conditions felt in the heart of the true believer, and understood by none else. The true Intellectualist and the sincere Religionist must each be free. Neither can surrender unconditionally to the other. I can hope nothing from the attempt to introduce into State schools religious teaching pared down to that which is offensive to no denomination. At the point at which it comes to be inoffensive to all, it is necessarily wholly unacceptable to every one who truly desires to have it, and understands its operation upon our hearts.

The main object of the State is assuredly to secure, as far as possible, the good conduct of the people: this is most easily attained, no doubt, by early, judicious, and enlightened religious training. But religious teaching is just that part which the English people do not choose to delegate to the State. Therefore the State has apparently no other course than to cherish to the utmost the Voluntary efforts of the Religious Communions; to aid them in proportion to their exertions; to insist on their reaching a certain intellectual standard; but by no means to interfere with the spiritual charge of their own members. To all which the establishment of merely secular State Schools would be fatal *. These seem to be the general aims of the Committee of Council on Education.

But to discuss the method of reconciling the two views of Secular and Religious Education, would be to enter upon the history of the Educational Enactments of the last twenty years†: and to suggest a plan for future guidance, would be a task

* How far this is applicable to a few of our largest Towns, I feel I have not the data for forming a conclusion.

† See particularly, with reference to the subject of the preceding paragraph, the noble-hearted "Public Education," by Sir James Kay Shuttleworth.—Longman, 1853.

which, to say the least, it would be wholly out of place to attempt here. But deeply impressed with the conviction that sanitary, moral, and intellectual improvement must move on hand in hand; satisfied of the necessity both of maintaining the Religious Character of the Education of this country, and of continuing the Intellectual Educational Developement which has made such gigantic strides since 1830; being most sensible, and firmly convinced that Voluntary and Local Efforts of the Community are essential to the maintenance of the English character, and that these efforts will certainly succumb before the force of the Government, unless they prove equal to the emergencies of the case, it seemed to me an imperative duty, if I stated any opinion at all on the means of promoting the physical welfare of the people, to express these convictions, which, as a Physician living in a place of Education, I have been led to form*.

In the discharge however of this duty, I am consoled by the belief that they who know so much of the course of the Educational History of the Country as to think such generalities superfluous, and they who do not see the reason of such digression in a Sanitary Paper, will equally believe it possible that the sentiments expressed may awaken thought in some mind that has not before so viewed the subject; whilst no one but the Writer need suffer from the labour that has been expended upon it. It is a further subject of consolation to me that, having endeavoured to come to independent conclusions on the subject, I find them not to differ from those expressed by persons who appear to me to be sound exponents both of our National History in this subject, and trustworthy thinkers on the matter itself. So that I can thankfully and happily watch the course of public controversy on a subject of momentous interest which my other duties forbid me to share.

There follows necessarily, upon the question of Religious and Intellectual Training, the consideration of Recreation.

Now Recreation is the freeing the body and the spirit from strain, to which either or both are subjected. What is recreation to one man is therefore labour to another: and the student could often do no better than wield the adze or the hammer

* It was certainly impossible ten years ago to notice, without consternation, how hundreds of the Clergy and Gentry were constantly passing through this place without any knowledge whatsoever of Physiological laws, or Hygienic principles; when all the country besides was yearning for acquaintance with them. It was, in another aspect of society, appalling to find a few years since, in even this favoured City, half a dozen boys, of ages from 7 to 10, who did not know the name of Christ, but as a common oath; and who never had been in a place of worship. The former of these evils ceased in a measure with the foundation of the Natural Science School, and will come to an end when the New Museum has fairly entered on its full work: the latter scandal probably does not now exist. Indeed, the more I see of Oxford, the more I am inclined to suspect that, on the whole, there is less gross evil than in most Towns.

for awhile, and let the body-worn mechanic peruse the works which he had left on his desk.

It is curious enough to notice how ignorantly some persons recreate themselves. Men often, in another form, press on the exhausted function, believing mere change to be equivalent to rest—which it sometimes is: or they wholly abandon themselves to idleness, whereas some occupation is absolutely necessary to any man accustomed to work.

Of all the causes which press on the spirit of a man who is fully engaged in the competition, anxieties, and cares of life, those which tell on him as a spiritual being, "heir of immortality," are, from time to time, the weightiest. He feels the urgent need of some time and some place where he may go apart for rest awhile. To the greatest number this is impossible. He has no such place, even if he have the time. The fields, it may be, are too far; his house is too crowded; he can find no quiet spot; the streets are his refuge and his chiefest solitude. What is it in us English which makes it impossible for the Churches to be always open, that the weary in heart may find stillness there? Has the experiment failed in the few cases that it has been tried? Are there none, to whom the opportunity has occurred, that can tell of the blessing of the few minutes dragged out of the hurried work, and soothed by the peace of the dim still Church?

What do the appointed guardians of our Churches say to this? Where do they expect the poor, careworn, overcrowded members of the flock to meditate? Do not the daily services at Westminster and elsewhere tell the feeling of the people? But do they not need simple mental repose and prayer as well as a service in which they cannot pause? Are none of the intellectual portion of the Community too weary on Sunday to follow the longer, and fuller of our services? and do they not pant often for just the quiet of the altar-side, where they might commune and be still? Does Peterborough Cathedral suffer because its doors and every quiet nook, to its honour, stand daily open?

Next in importance to this kind of Re-Creation, or making again of the spirit of man, ranks the feeding of his Intellectual Faculties. Of the way in which this is to be done; of the reading which is desirable for children or for men in their various stations, it would be obviously idle here to speak. But, as to the means, it is clear that (1st) until lately the means were not within reach in Oxford, but that now in the Free Library they are; and (2dly) that among the greatest boons which have been conferred on the working classes is certainly the Act by which Free Libraries may be supported by Rate. It can hardly be necessary, though it may be agreeable to some, that we should have a Free Museum, because the University can assuredly meet the wants of the City in this respect; and there will, I presume, be, ere long,

a department of applied Science and Art, of Engineering, and an Exhibition of Œconomic appliances in the New Museum.

So we need, in Oxford, nothing more at present, in this respect, except increased space in the City Library, and the further developement of its resources. It was determined to keep this Institution open on Sunday evening: the decision gave, I fear, much offence to a minority. In that minority I could not place myself. The rational mode of observing Sunday, in particulars of this kind, has for many years engaged my attention; and I have taken much pains, on various opportunities, to inform myself of the true manner in which a laxer method of observance than our own operates in various parts of the Continent. My conclusions, unsatisfactory as they may appear, are easily told. I am satisfied that a genuine observance of the Sunday adds to the Happiness of Working and Professional Men: I am satisfied that many of those who always make it a day of the most open holiday are not those laborious persons who the most require rest: I am satisfied that in many Continental Towns, where there is much open gaiety, the portion of the community that has the truest sense of the whole nature and destiny of man, and that strive to live at once in the most active discharge of duty in this world, and with the most constant looking forward to the next, find their chiefest rest in the peaceful contemplation of the visible works of God; in the application of their mind, as far as they can apply it, to that which they feel their nature to stand in need of; to such communion with their Maker as their souls can reach; to such unbending of the body as their physical state requires, and not to the reeking air of the beershop, the noise of the highway, or the excitement of public assemblies. But, above all, I am satisfied that, seeing the exceeding variety of men's natural powers and inclinations, of their early training and associations, and their present mental and physical necessities, nothing is more uncharitable, and nothing more untrue than a stern judgment of all men by any settled rule. Almost all such rules depend on the early associations of those that apply them. Such things must be left to each man's heart; and the truest Physician of Souls is he who throws in the way of the people the greatest opportunities of spiritual and intellectual elevation in their most attractive forms; and, looking to the blessing of the Preserver of Men on these larger views, trusts little to legislative and restrictive enactments. All which will appeal in detail to the minds of men in the most diverse and sometimes the most opposite form.

It is quite needless now to draw the attention of the working classes, or indeed of any part of society, to the value of that part of the contents of their Library which treats of Natural Knowledge. It may truly be said that it has the especial advantage of enabling its votaries to refer, for the most part, to the original source,

by questioning Nature herself. There are and ever will be unsolved problems in the Natural History of every neighbourhood; dissections to be made; developement to be studied in every water; the abstrusest Chemico-Physiological questions to be answered. There are stars to be explored by the observer; and their motions to be calculated by the mathematician. None of these are out of reach of the many: we have among our own tradesmen ardent cultivators of various departments of Natural Knowledge. May every success attend their undertakings, and all means be open to them. Any one conversant with the true nature of Physical Science, knows well that wrongly pursued for the purpose of science, it is wrongly pursued for the whole man: speaking generally, moral faults will react on his intellectual frame*. A Christian it cannot make him: as Bacon says, "Out of the contemplation of Nature, or ground of Human Knowledge, to induce any verity of persuasion concerning the points of Faith, is, in my judgment, not safe: Da fidei, quæ fidei sunt."

The effect of Natural History Studies on the Character of Man is not as yet fully felt. Under the term, "Studies of Nature," must of course be included all that relates to natural objects; their external form and appearance, their formation as a whole, their internal nature. They include, on the one hand, all external appearances, represented in art; such as human form, human expression, with their modifications and the causes of them: and, on the other, all the internal structure, relations, functions, of all things organic and inorganic, by whatever means examined and made known. It is clear that nothing else is an adequate history of Nature, or of any of its parts. To consider internal characters as the sole object of Natural History, would be as ridiculous as to consider their outward appearance its only business. I name this only to remind the Reader how many educated persons, in every rank of society, are interested in the progress of Natural History, including, for instance, the 22,000 Medical Practitioners in Great Britain alone.

We must not at all measure their full effect on man, by their effect hitherto. They are only beginning to tell. Some sciences are quite in their infancy; but they reach maturity early: and, if fed on Truth, which is their Tree of Life, they never die. I freely admit the danger and the fear of this state of man. By the tree of knowledge was his fall; and as the people run to and fro, and knowledge is increased, pride may bring about a more terrible, because a final, degradation of the mature race: but it need not. Individuals have each their free-will, which in the totality is the will of the race. The triumph of the individuals is the triumph of the race.

Now what are the qualities which the study of any portion of the field of Nature, unless her reign be disturbed by his rebellion, engenders in Man? First of all,

* See a noble discourse on this subject by Hugh James Rose, in his Sermons preached before the University of Cambridge.

truth, candour, freedom from prejudice and partizanship, gentleness, patience, perseverance, hope, sagacity; then the love of all kindred spirits, and the peace of a contented mind*. Of all these they partake the most whose life and habits the most befit the student of the unwritten word of God, "of that his servant Nature, whose manuscript lies open and expansed to all." In Science, as elsewhere, Man's evil nature intrudes to mar the Work. But in the contest is his strength:

> "Who strives, he wins; and gathers might
> For other future sterner fight."

In consequence of the increased Education of the People, the struggle for these habits of mind is more and more widely spread. Not only the artist before his model, the anatomist with his knife, the chemist at his balance; not these only who are the professors and exponents of their lore, but through all society, fresh from the school or the lecture, the tradesman with his microscope, the apprentice in his daily walk, the mason at his carving, are looking on Nature, with reverence, or without; are drawing in her silent teaching, or casting it out; are interpreting this page as the Progress of Man, or contemplating it as the Word of God.

Truly this knowledge is power. What does History say? Do they, that have power, wisely use it? or do they not?

There are other means however of Mental Refreshment than those which the Libraries provide. I allude to Music and to Drawing. As to the first, it is to be acknowledged that its successful cultivation implies either great Natural Gifts or great Precision and Industry, and that all homage should be shown to Milton's conviction†, "that solemn and divine harmonies recreate and compose our travailed spirits; and that, if wise men and prophets be not extremely out, they have a great power over dispositions and manners, to smooth and make them gentle from rustic harshness and distempered passions."

Public Music, Amateur and Professional, deserves therefore, in every Community, the highest encouragement. Hullah has unquestionably been a National Benefactor. Oxford, with her Choral and Motett Societies, and her College Choirs, may and probably will show what kind of intellectual training can be furnished to a considerable portion of a Community through the subtle sense of hearing. But indeed of this, as of the Drama, it must be said, that, to be a real instrument of good, it requires the earnest efforts of able and generally cultivated minds. Great harmonies, like the amazing mechanism through which they find their way to our

* See an account of the temper of a scientific man, quoted in the Appendix to a Sermon preached before the University by my excellent and able colleague, Professor Price.

† Probably every one who reads this knows Milton's letter to Mr. Hartlib.

soul, are grave and holy things, and by no means to be trifled with. Bad Music is an intellectual nuisance, and it is one way by which the virgin senses of children are polluted, as bad wall-prints and incorrect drawing are another; it is as great an intellectual evil as a foul smell is a physical one. But the greatness of the evil our accustomed ears are too hardened to appreciate. An evil, however, it is, and one which would not be borne in a New Atlantis or in a Model Republic.

There is nothing more curious, and few things more saddening to me, in the History of Man, than to notice how Arts are lost; and what great labour the race endures in regaining them. It is wonderful how, after Palæstrina and some of our old English Composers had written their "solemn and divine harmonies," they should be set aside for the florid trash which passed current thirty years ago: and the more remarkable is this, as the Services of Palæstrina are yearly heard in Rome, and as our Cathedrals should have disseminated a true and elevated taste in and through every district in the kingdom. To say here a word on the deep-rooted cause of this is not for me. I may venture only to record that the cultivation of Public Music is an educational object well worthy of the attention of our best residents, who may cooperate in this matter with the zealous Musical Professor, and with those who have already done so much for it. The amount of material for the purpose is enormous, and needs only bringing together and cultivation, to show what results can, by hearty combination, be brought out in one small City. The Printers of the University Press have explained by their Concerts what one body of men can accomplish. The proposal to erect an Organ in the Town Hall will, if carried out, tend to foster, as it does in other towns, the highest development of Public Musical Art.

There should be now no need for any man to urge the study of Drawing, either as a means of cultivating powers of observation and habits of precision, or as a higher kind of intellectual exercitation. We have been roused in our time from the aimless dilettanteism of the past age to a right apprehension of the two great ends of Art: the one, the earnest, faithful contemplation, and honest, patient imitation of the forms and the colours with which the earth has been adorned: the other, the teaching of the heart and the intellect through the painted or sculptured ideas to be conveyed by that form and colour. Whatever qualities may be strengthened by this loving earnest imitation, we may train in our institutions for Drawing: whatever we may learn from the great spirits that have from time to time spoken for the good of men in this form of speech, we may, if we be humble, glean from their works. But here, as in Science, all self must be eliminated; and he who would learn from even the outward aspect of the world the lessons it will teach, must approach as a child—in reverence and in trust. I know no sign of our time more hopeful than this, that not only have the mechanical skill and the mechanical appli-

ances, brought to bear upon our manufactures in the last long Peace, been crowned with success beyond those of any other epoch of the world*, but the perception of beauty and of truth in Art has been slowly growing up at the same time. I must not allow myself to indulge here in the charms of a controversy; but I may boldly say that a new page of nature and of art has been opened to us through the works of Ruskin; and that the analytical powers which he has brought to the investigation of the artistic aspect of Nature has at once illumined her book, and given eyes to the Reader. Nor does this conviction remove one tittle of my gratitude to the Great Practical Teachers of Art, who, in Greece, Italy, and Germany have shown, in former ages, how Genius may create for common men, a world, which but for their revelations must have lain unknown. To these gifts from Art to Man, England bids fair to offer her full part.

How much the Physician and the Philanthropist must desire the success of Schools of Design, and Schools of Art, and the exercise of the faculties which they can cultivate, whether for the purposes of trade or as the means of enjoyment, these few words must testify. I add only that when a Professor of Art resides in our University, as I trust will ere long be; and when we have, as he would make, an Historical series of Art, no City will be more happily placed, in these particulars, than Oxford.

The desirableness of more thorough and systematic attention to mere Physical Recreation is not perhaps sufficiently appreciated. Indeed, for professional men, however hardworked, to expend half an hour upon joyous bodily exercise, away from a dusty road, almost brings them into discredit. A Surgeon may dine out daily, expending four hours of time, and injuring his digestive organs; but should he seek health, elasticity, and vigour—of body and mind—by one half hour a week at Quoits or at Tennis, half his patients might desert him; not seeing that what improves the bodily health of an intellectual man, improves his mental powers, to the great advantage of his employers. By this fashion, it can be called nothing

* This remark may be justified, if by no other instance, certainly by one recent modification in the way of applying Steam Power to Ships. Any one who has had opportunity for observing Naval Affairs as, through the almost parental kindness of Admiral Moresby, I had, several years ago in the Mediterranean, cannot but consider the change from the Paddle to the Screw as in its results one of the most striking of all improvements upon applications of power previously known. Any one who doubts this should study such a Ship as the Duke of Wellington, on the one hand, and one of the new Gun Boats on the other. I may be forgiven for respectfully saying, by the way, that any man, who has never lived among English Sailors, has not seen one of the noblest aspects of human life.

else, I have no doubt, many valuable lives have been lost. Besides its immediate effects, it engenders a certain stiffness in the whole deportment singularly unfavourable to the life of a man much employed within doors in intellectual occupation. There can be no doubt that the maintaining the occasional habit of boyish exercises to a late period of life might prolong the health of youth, unless resorted to with too little frequency, and too freely indulged in when enjoyed. It is moreover to be observed that this remark is of the more consequence as the educated and intellectual classes increase in proportion to the whole population: for otherwise, as a greater number of minds become overtasked, and the muscular development is impaired by the more intellectual life of the many, more nervous diseases will be engendered; and more weakly children will be born. Thus, in a physical sense, we might have to say,

Ætas parentum, pejor avis tulit
Nos nequiores, mox daturos
Progeniem vitiosiorem.

It is given only to a few yearly to leave their work for several weeks, to scour the Continent or stalk the Highland heather. But thousands and tens of thousands need it, and might in a more considerate state of society find their repose, and gain their elasticity by their own Town-side, as of old by the Village-green. It would be impertinent trifling in me to say this, did I not believe that men's true work would be better done with a more elastic frame and ruder health; and that their families and their employers might find some to be happier and wiser men who are now, morally and physically, victims to accidental custom.

But childlike gambols are not beneficial to the mind-workers only. It is, at first sight, remarkable that even the hand-workers will rush to cricket and to games of strength, when they have the time and place allowed to them. Labouring men, if they dine at their works, as ours do in the dining-room of the New Museum, will often give half the dinner-time to a game of strength and of bodily skill.

Our favourite national game of Cricket is a bad one for Towns, because it occupies much space, and can engage therefore but few persons, and is dangerous to children and bystanders. There are many others quite as good: Quoits, Foot-ball, and a score that might be made and devised; inexpensive, occupying small space, healthy, suitable to all strengths and all dispositions. Oh! that some of the Games of Delphi, the Stadium of Laodicea, the Palæstra of Athens could be by our Warehouse sides: then some hearts would be lightened, and the parching need of ardent spirits to stimulate some wearied nervous systems might be lessened in our streets. We are, in Oxford, surrounded by the blessed elasticity of youthful spirits, that pass by every year to leave us, alas! too soon: we—who yearly see their joy in our Cricket Matches, our Boat Races, our Games, shared in by our best and our ablest men,—we think not of the sickness of heart and the sin that some of these means might spare to larger and less happy Cities.

It is not too much to expect that the University ground, North of our Museum, may be saved for this purpose. If, at our Encænia, the stranger might see a public holiday, with our working youths racing, or throwing, as 'Discoboli,' their discs for a prize, it were a sight not unworthy of the place, or the people. "Striving for the mastery, being temperate in all things, keeping under the body, bringing it into subjection," they might do no dishonour to persons who spend so much time in the contemplation of the people of Athens, and so little in the exercise of some parts of their wisdom, and some means of their greatness. The University, by giving prizes for these Athletic Games, and by imposing its own regulations on the use of its own ground, would show that public concourse does not necessarily mean public revelling, nor games imply idleness.

The General Considerations which have been advanced in the preceding Chapters, will, I trust, tend to confirm those who seek the physical well-being of their neighbours, in the opinion, that attempts in that direction must also be attended by the promotion, of intellectual culture, and of increasing purity in the moral and the religious sense—that practical conviction of their duty to others, and towards God, is as indispensable to them as is a knowledge of the material world, and of the laws of their own organization—that though it is our duty to do all we are able for ourselves, it is no degradation to receive the help of mutual and voluntary associations, but rather an inestimable benefit to us, to our people—that we must accept, and are bound to further to the utmost, such legislative enactments as will ensure the useful and systematic action of voluntary efforts—and, lastly, that we bear in mind that many Institutions, however good and perfect in themselves for the wants of the people at the time of their foundation, require Changes, which often are improperly construed into censures upon the past, but which are in truth *Additions*, the need of which could not have been foreseen.

CHAPTER VI.

The Summary.

The object of the whole of the inquiry which has been made, has been to determine, as far as was possible, the Cause of Cholera in Oxford and the District which surrounds it; and to elicit from the general result what can be effected by way of prevention of the Disease, or of preparation for meeting it.

The First Part was occupied in stating the Facts of the Disease; and the Second in describing the plans which the Board of Health adopted for the welfare of the City.

It seemed the fitter course with respect to the Third Part, to sketch in a broad manner for general consideration certain aspects of Civilized Society, as its masses stand in relation to physical and moral causes, in a City which contains a moderate

population; and which has some, and is exempt from other, evils dependent on life in a town. This has been done with the utmost brevity; and will necessarily appear inadequate to the greatness of the subjects. The sketches, however, can readily be filled up in the minds of many; but may perhaps open up a new field of contemplation to some hitherto unaccustomed to consider the larger exigencies of human life. If so, their object is fully attained.

It remains now to make a summary of certain purely local questions which those pages have suggested.

Immediately upon the close of the Epidemic, I was able to procure from many of my Medical Colleagues their opinions on the chief Sanitary deficiencies of the City: a summary of these, with their usual kindness, which indeed I cannot in any manner adequately acknowledge, they permit me to make public. The following is the Question that was put to them.

What sanitary improvement are you most anxious to see at once carried out?

Mr. FREEBORN states, in answer to this question—"I think it of paramount importance, that in attempting to improve the drainage of Oxford, the City should not be deprived of the wholesome water which is supplied through the gravel soil. This accident has happened in some parts of the Town, and people have been obliged to sink their wells into the clay, the water from which is bad and quite unfit for drinking or cooking.

"I think a great sanitary improvement would be the covering in of the Trill Mill Stream.

"When the rivers are low, and the water in the sewers very scanty, noxious gases accumulate in the sewers, and find vent through the water-closets which are drained into them. I have been lately forcibly struck by the offensive condition of some of the better houses of the City from this cause. Cases of Choleraic Disease have occurred in these houses, in close relation with the intensity of the offensive smell. I think this evil might be remedied by adjusting shafts to the sewers."

Dr. GILES says:—"I think we are not sufficiently aware of the distance through which fluids, retaining their peculiar properties unimpaired, may percolate into the wells, &c. As an example, I may mention the circumstance of a large heap of salt dissolved by the bursting of a water-pipe at the top of the High Street, influencing the taste of the water in various wells for six weeks or two months, as far as Castle Street."

Mr. HANSARD strongly urges "that the Trill Mill Stream should be covered in, through its entire course to the bed of the river." He is also anxious to see carried out "the naming and legibly posting up the names of the numerous courts and alleys in the poorer districts of the town. In London," he says, "this has been found of great service, both in a moral and in a sanitary point of view; for it calls attention to those hidden and otherwise forgotten spots, first and most severely affected by Epidemics."

Mr. HESTER deems "the flushing of all the streams into which so many abominations empty themselves, one of the most important of the required sanitary measures. I would name," he says, "the Trill Mill Stream more expressly as an example."

"I consider likewise that all persons keeping horses, and having large quantities of manure, should be compelled to carry it off frequently. No one can have passed Inn yards, when the

manure was being taken away, without being struck by the dreadful smell arising from it. It is a fact worth considering, that three fatal cases of Cholera have occurred in the immediate neighbourhood of the Mitre and Maidenhead Inns."

He dwells on the importance of "a more efficient system of drainage, and the removal of all cesspools. An inquiry should be instituted as to the state of every house in the place, and as far as possible every nuisance of this kind removed, and by having water-closets constructed with a fair communication to the external air."

Mr. HITCHINGS considers it among the most important of sanitary measures, "that windows be put at the backs of houses where there are none now, or that some such means should be adopted for free ventilation.

"That whitewashing be strictly enforced. And overcrowding of houses prevented."

Mr. HUSSEY wishes that all cesspools connected with water-closets and privies, should be made to empty into the main sewers.

He remarks, "that when the City is supplied with water from the large pond of the Railway, it should be made a punishable offence to throw offensive things into it, as in the case of the New River in London."

Mr. LEAPINGWELL says that in the district in which he has been chiefly engaged, (i. e. St. Thomas's), "nothing short of clearing the ground of the present buildings, and reconstructing proper dwellings, will be sufficient."

"The state of the river, from Pleasure-boat Row to the Castle Mill, should be entirely altered."

"The other streams are equally in need of improvement."

Mr. OWEN considers the most important sanitary requirement to be "a better drainage. All the open ditches passing through the city should," he says, "be bricked over, and

"The dwellings of the poor should be examined, especially with regard to the situation of the privies."

Mr. WOOD thinks it especially important to have "a better supply of water," and

"A large increase in the number of what ought to be water-closets, particularly in the courts and smaller streets, where it is not unusual to find from six to ten houses with only one privy amongst them, and that one scarcely ever in a state fit to be used."

There is little occasion to enlarge upon these brief but luminous statements. The Town, they say, wants drainage; the streams want purifying; the waterclosets and privies need improvement; the houses of the poor require inspection. The dwellings of St. Thomas's can only be cleansed by removal: in short, faulty dwellings, faulty ventilation, foul streams, inadequate drainage, are by united testimony to be found even in this City of Palaces.

A general retrospect of the Sanitary improvements in Oxford during the last few years, may aid us to the decision of what remains yet to be done*. I shall in few words recapitulate them. By this course also the Reader will feel thoroughly satisfied that the Authorities have not been unobservant of the wants of the City.

1st, Since the Cholera Epidemic new Water-works, far more efficient than the

* It seems unnecessary to attempt to enumerate all the evils, whether of slaughter houses, or other undesirable tenements, against which the Authorities have power to proceed.

old, and capable of supplying more than the present wants of the Town, have been erected. They are, as all know, removed from the river, being supplied from an excavation in the gravel to the south of the City, of more than eleven acres in extent. The water is therefore filtered through the gravel bed. Sir William Cubitt's recommendation to take the water from above stream, has been departed from, for the sake, it is to be presumed, of using this natural filter. I may well leave the merits of a difficult case in the hands of those authorized to decide upon it. At all events, I am happy to believe the supply bids fair to be plentiful and good.

2dly, A reference to the Map at the beginning of the Memoir, shows in a general manner, as has been before stated, the partially drained, or the undrained portions of the City. But it is not to be understood of Localities that are shaded green on the Map, that they have undergone no improvement. The largest tract so coloured, is that of St. Aldate's and St. Ebbe's. But in that district a foul ditch has been filled up, a sewer substituted, and various drains have been constructed, both in the upper and lower parts of the area. The drains, however, empty themselves into the adjoining branches of the river. The foul channel, called the Trill Mill Stream, is uncovered; and the surrounding country is liable to floods, by which the water is from time to time pressed through or over the banks into the adjoining soil, and some of the cellars of a part of the district.

St. Thomas's has been greatly improved in the last ten years; indeed any one familiar with the course and state of its ditches in 1846, would hardly recognize some parts of it. It has appeared however in the previous pages, that St. Thomas's still contains some of the worst blots on the City.

In other parts of the City, additions of lesser drains discharging into some main drain have been making. Complaints are occasionally made that the consequence is a change for the worse, in consequence of the reflux of noxious gases from the main drain. This is a result which, in the existing state of sewers, is probably of frequent occurrence.

Various cesspools have been removed*: during the time of the Cholera, cottages and rooms were cleansed and whitewashed by order of the Commissioners: the lodging-houses are in much better condition than they formerly were: no one could desire to see a better example of the condition in which a poor tenement under good management can be kept, than by inspecting the apartments of the Society for the relief of distressed travellers.

* During the time of the Cholera of 1854, about 450 Privies, 150 Piggeries, 50 Drains were removed or cleansed: not more than 30 of the Privies were however converted into Water-closets.

Some of the Cesspools were large: one was emptied which contained from 40 to 50 tons of ordure. It was nearly 14 feet deep. In another the superficial area was over 300 feet.

No work of this kind was done during the Cholera, but what seemed to be really necessary.

I am indebted to Mr. Galpin, the City Surveyor, for detailed information on these and kindred subjects.

Public Baths and Washhouses have been established, in great measure, through the exertions of Mr. Duncan, aided by Mr. Alderman Butler. A Free Library is open, and largely used; one of many benefits which Mr. Alderman Sadler has procured for his native city. And though our Workhouse is no model for any public institution, perhaps the Guardians' Industrial School at Cowley may ere long be so esteemed. Three Cemeteries have been prepared outside the City.

We want then, for the remedy of the Social and Physical Evils which in common with other towns we have, first, the thorough use of the Powers we possess; then, the addition to our present Acts of certain Powers which we do not possess; or the placing ourselves under the Health of Towns' Act. Above all, whatever is done, should be done as part of a carefully prearranged plan, of which some is yearly executed till the whole is complete.

For these and all our common interests, we require the united, but unshrinking action of the best and ablest minds that dwell within our walls: the beginnings of this union we have already witnessed, and may hope to see it increase yet more and more.

With respect to the Arrangements, in the event of another Cholera Epidemic visiting Oxford, it has only to be said, that probably none could be better than those adopted in 1854, and described in Part II., with the following exceptions; that—

1st, They should be determined upon, whenever a decided Cholera Epidemic appears in any town in England: though of course salaries need not generally commence till the Epidemic appears.

2dly, The Authorities should certainly be able to command, at any moment, adequate space for a House of Observation.

3rdly, There should certainly be at once provided Wards for Contagious Diseases, if not by the Infirmary, by some other Body.

4thly, In any Diarrhœa Epidemic, the Public should be earnestly cautioned to destroy by Acids, or Caustic Alkalies, all Diarrhœa Evacuations, before they are cast into Drains or Cesspools; and to destroy them as soon as they are passed *.

The convenience, economy, and wisdom of making these provisions beforehand, cannot be too earnestly insisted upon.

* None who are unacquainted with the ordinary habits of mankind on a large scale, can be expected to credit the difficulty of ensuring the observance of any prudential conduct. I saw under the bed of one Cholera Patient, the accumulated Cholera linen of the deceased child of the sufferer: it had lain for some days unwashed, and reeking. In a quiet respectable house, the saturated linen of a Cholera Case was kept in a room in a large heap for the next washing-day. The mistress of the house had Cholera (in consequence?). No doubt such things were of constant occurrence, notwithstanding the provision made for washing all Cholera Linen, on the premises of the Board of Health.

APPENDIX.

APPENDIX A.—See p. 90.

Danger attending certain localities at WITNEY.

The following brief statement connected with the late Epidemic may be not unacceptable to persons interested in the state of this industrious town. I may be permitted to express, by the way, my sincere thanks to the various gentlemen who aided me in my inquiries, when I was called upon by the Board of Guardians to advise them concerning the most efficient means of meeting the Epidemic, and to supply them with Nurses.

Cholera commenced in Clark's Yard, West End, *in the same house* and *in the same yard* where it broke out on its last visitation. I am informed that it followed the same course as in the first Cholera Epidemic, appearing almost simultaneously in the lower part of Corn Street (where indeed the first death occurred.) *Eighty-five* of the *one hundred and two cases* of Cholera and Choleraic Diarrhæa belong to these two localities. In them nearly all the deaths occurred; they were equally conspicuous in the last visitation.

The said *Clark's Yard,* in West End, lies low; it is rather damp; it receives into an ill-constructed drain a large quantity of offensive sewage; the drain runs near the well, which it pollutes; a few yards from the Houses it is uncovered and partially stagnant. It had, when I was there, one of the most sickening smells I ever perceived. In the lower part of Corn Street a large stagnant sewer approaches and crosses the street; it is altogether uncovered; from it proceed, after rain, and changes of temperatures, gases most offensive to the smell. It takes its origin in the High Street; in the first part of its course it is known by the name of Guns Hole, lower down it is called Emma's Dyke. It requires no medical knowledge to feel this to be a spot quite dangerous to the Town. In fact, with such spots in the centre of a population, no one should be surprised at the outbreak of Typhus, or any Virulent Disease.

APPENDIX B.—See Part iii. Chapter iii. p. 116.

Having been very desirous to know what were the ancient habits of the Chinese with respect to drainage, I was enabled, through the kindness of my learned friend Professor Max Müller, to obtain the following interesting particulars, from the well-known ABBÉ HUC. The questions which I transmitted are printed in Italics.

Extract from a letter of M. STANISLAS JULIEN, Member de l'Académie (le 30 Dec. 55).

"Mais comme je tenais beaucoup à vous satisfaire j'ai eu recours à une personne qui a résidé et voyagé 15 ans en Chine, au célèbre abbé Huc, auteur du voyage au Thibet.

1°. *How are the large towns drained?*

Dans les grandes villes qui sont dallées ou pavées (quoique le pavage soit in général mal entretenu) l'éculement des eaux pluviales et menagères se fait, non au milieu de la rue, dans une partie en pente pour le ruisseau, mais des deux côtés des maisons, qui comme dans beaucoup de rues de notre capitale, sont un peu bombés, exactement comme dans la rue Vivienne, que vous connaissez, et où les eaux s'écoulent au bas des trottoirs, avec cette différence en notre faveur que, grâce à une invention très-avantageuse, le dessous des rebords du trottoir en question est creusé de manière que l'eau s'écoule par dessous le trottoir.

2°. *Has each house a cesspool?*

Beaucoup de maisons ont des fosses d'aisance; celles qui n'en ont pas, possédent dans chaque logement des tinettes (sorte de tonneau haut et qui est plus large par sa base que par le haut); ces tinettes sont souvent fort élégantes et ornées de laque et de peintures comme des meubles d'ornement. Elles se ferment aussi hermétiquement qu'il est possible.

Il y a des industriels qui à des époques regulières viennent en chercher le contenu qu'ils payent assez cher; cela ressemble tout à fait à ce qu'on appelle à Paris des fosses inodorés; seulement chez nous c'est le particulier qui paye cette opération. Il y a encore cette différence; on vient chercher á domicile les tinettes, on les emporte pleines sur une voiture (qui va de maison à maison) et on en laisse à la place d'autres qui sont vides.

Les détails qui précèdent repondent à la 3e question: *How are the cesspools cleaned out—by carts? or by drains?*

4°. *What do they do with the refuse? is it converted into manure? If so—how?*

Cette matière est employée à fumer les champs. Voyez les Mém. de *Peking* (16 vol. 4°. tom. II. pag. 612*.)

Elle n'est pas convertie en engrais, au moyen de composts (c. à d. par son mélange avec d'autres substances qui en doublent ou triplent la quantité; mais elle est employée *pure!*

Suite de la question—*Whether by deodorizing process?*

Je viens de dire qu'on l'employe pure et sans mélange; ce qui laisse sans objet les autres parties de la question: (*if so, what process? and in large or small, public or private establishments in or out of the towns?*)

5°. *Does the plan answer commercially?*

Suivant l'abbé Huc, cette matière est l'objet d'une espèce de spéculation très avantageuse. Il y a des propriétaires qui établissent dans les rues très fréquentées des fosses d'aisance où le public ne peut avoir accès qu'au moyen d'une petite retribution. Puis ces mêmes proprié-

* "Ta-feu"—Stercus humanum—considered by the Chinese the best of all manures, is used in two ways; it is either collected into pits and then diluted with water to form liquid manure, which is distributed either from watering pots, or by the usual processes of irrigation; or it may be mixed with loam earth, and then run into moulds, and so formed into cakes, which are dried in the air, and of these there is a considerable traffic. When used they are reduced to powder, and then spread over the land. These cakes "bien loin de puer ont une odeur de violettes qui est agréable."

Vide "Mémoires concernant l'Histoire, les sciences, les arts, les mœurs, les usages &c. des Chinois—par les Missionaires de Peking," in 16 vols. 4to, Paris, 1776—1814.—vol. 2. p. 612. The substance of the passage alluded to above is here given.

taires vendent encore la matière qui a été deposée par le public, à des industriels qui viennent la chercher et la transporter dans les campagnes où ils en tirent un bon parti.

Il y en a outre sur les routes voisines des champs des fosses d'aisance dont l'accès est gratuit, mais qui évidemment ont été établies bien plutôt dans l'intérêt du paysan agriculteur que du voyageur.

Quant à l'industrie des fosses d'aisance où l'on paye, elle ressemble tout à fait à celles des cabinets inodorés de Paris ; il y a tel propriétaire qui en possède plusieurs en différents quartiers de la Capitale et en retire un bon revenu.

6°. *Is the present the same as the old plan? if not, when did they change, or what was the old plan?*

M. Huc croit que l'emploi des matières fécales pour engrais remonte aux temps les plus anciens, et que la manière de la recueillir a dû être la même autrefois qu'aujourd'hui.

Voila, mon cher Monsieur, tout ce que je puis vous dire pour repondre aux questions du savant professeur d'Anatomie. Je souhaite qu'il en soit satisfait.

APPENDIX C.—See Part iii. Chapter ii. p. 131.

Protest against Introducing Gas into the Infirmary without Proper Ventilation.

The undersigned beg leave to Protest against the introduction of Gas into the Infirmary, without tubes for carrying off the Products of Combustion, as proposed by the Ventilation Committee.

The Products of Combustion of Gas are among the causes that deteriorate the atmosphere of dwellings and workshops; and of the various sanitary improvements that have been recently suggested, in this and other countries, there are none more sure than the means for removing those products of Combustion.

A County Hospital is especially bound to set an example for arrangements which are conducive to health, and can never be justified, when the power of reconsideration is open, in commencing plans which are known to be bad in their principle.

If the Radcliffe Infirmary, against the expressed wish of the Committee appointed to advise in the Ventilation of the Infirmary, place Gas-burners in the passages which have been made to communicate directly with the Wards, or in the Wards, without conducting away the products of Combustion from these burners, it will give countenance to the opinion that this precaution is at least unnecessary, and will furnish an argument for its neglect in workshops, and other rooms where many persons are congregated; to the great injury of the working classes, and the detriment of the public health.

Against this course the undersigned take leave to protest.

Signed by all the Physicians, two of the Surgeons, and seven Governors, including Professors Daubeny and Donkin.

The Gas is introduced all over the House without Ventilating Tubes.

APPENDIX D.—See Part iii. Chapter iv. p.136.

Letter from the Author to the Vice-Chancellor of Oxford, on the duty of erecting Wards for Cholera, or other Epidemic Disease.

DEAR MR. VICE-CHANCELLOR,

During the late Cholera Epidemic, the Oxford Board of Health requested me to draw up an account of the disease as it appeared in Oxford in 1854.

In one section of that Report it is my duty to record whether any, or, if any, what, measures should be taken in another advent of the disease.

I have given my best attention to this subject, and having considered that the Town has already, between the years 1832 and 1854 inclusive, expended several hundred pounds on Temporary Buildings for the care of the sick, I have decided on recommending that Permanent Wards, with such appendages as may be necessary, be provided to meet the emergencies of any Epidemic.

The Welfare of the Town, its Health, its Reputation, and its Trade, demand that it should not be subjected to the periodical excitement of hurriedly erecting imperfect and expensive Temporary "Pest-houses," if by any means a conveniently-situated and Permanent building can be obtained.

No one need doubt that the existence of such a building would not only afford one of the best safeguards against the spread of most Epidemics, but also with certainty check the panic caused by the excitement of energetic preparations at the outset of the disease. It would be in readiness to receive *the first cases* in any outbreak; whereas on previous occasions the disease *has greatly spread before the necessary accommodation* has been provided.

The building need not be large. It should have a Ward for male and one for female patients; a Kitchen; Nurses' apartments; a convenient Surgery; a Laundry; a Bath, or Baths; and proper Drainage. The Wards should be capable of extension. All may be on one floor. The structure should, if possible, be conveniently situated for access from the Poorer parts of the town.

Assuming that such a structure should be raised in Oxford, the next points to be decided are, by whom, when, and under what management.

It is possible that Boards of Guardians may have power for the immediate erection and maintenance of such an establishment. But this is not at present quite certain; and even if it were, I do not think it by any means clear that this arrangement would be always the best.

In many of the smaller towns, probably, they would be the only body competent for the purpose. But in towns of the middle class, (as average county towns,) there exists usually a General Hospital. That Hospital possesses necessarily an efficient Permanent Staff, and all the apparatus for medical treatment on a complete scale, of the best kind the District can afford, and always in readiness.

I am not an advocate for the introduction of cases of Cholera, or Contagious Epidemic disease, into the General Wards of an ordinary Hospital; but, for the reason above stated,

namely, *the constant state of preparation of a most capable system of management*, I should advocate the erection of *Wards properly detached*, as eminently serviceable to the whole District which supplies the patients to the General Hospital.

Whether any given Hospital is able or willing to furnish such accommodation, is a question for the Hospital alone in each case to consider. The chief grounds of inquiry would be:—

1. The Site.
2. The Benefit or Detriment to the efficiency of the Institution.
3. The Funds.

1. In the case of Oxford and the Radcliffe Infirmary, all these would be favourable to the proposal. The large garden at the back of the Infirmary * is more open than any other available site which is near the centre of our poor population, and the nature of the adjoining property to the North, the existence of great roads to the East and West, and of large open spaces occupied by the Workhouse and the University Press, all render it probable that this district will never be closely pressed upon by habitations.

2. The general benefit to the Charity would partly lie in this,—that every Institution which holds a high character for efficiency, must, in order to maintain that character, *meet any demands which new circumstances evoke;* and if the Radcliffe Infirmary is to remain the great efficient Hospital of this district, the Governors should carefully inquire whether it can help in the alleviation of the new and terrible disease, which, five-and-twenty years ago, was unknown in this country. Other considerations of the same character will present themselves at once to the Committee, and no doubt especially this,—that whatever tends to raise the efficiency of a Hospital, and adds to its importance, not only benefits the Patients, Pupils, and Staff of the Hospital itself; but indirectly reflects corresponding and ever-increasing advantages *on the sick of all stations* in the surrounding district.

3. With respect to the question of Funds, as the amount need not exceed the collective expense of the Three Temporary Buildings we have already erected and removed, there is no doubt it might be provided by subscription.

One question will readily occur to most persons, namely, whether the health of the Infirmary will be prejudiced by placing in its spacious garden detached Wards of the nature proposed. I am of opinion that it would not be prejudiced; and, of course, that the same immunity would be shared by surrounding habitations.

I am,
Dear Mr. Vice-Chancellor,
Your faithful Servant,
HENRY W. ACLAND.

To the Rev. the Vice-Chancellor of the University of Oxford.

* The Infirmary stands on between three and four acres of open ground: a large part is let now as a Market Garden, on yearly lease.

APPENDIX E.—See Part iii. Chapter v. p. 154.

As it may interest some readers to see the temper in which earnest Scientific men are endeavouring to carry on their work, the following is reprinted :—

"In pursuance, then, of the course which I have set out, we cannot but observe upon the temper and the tone of mind which is requisite for a successful study of the external phenomena of nature. Now, whether it is true or not that the philosophical temper was first taught by the Gospel, yet it is true that the spirit of teachableness and humility, a willingness to be only learners, a consciousness of our inability ever to arrive at the whole truth, an abnegation of trust in our own powers only, a depreciation of our own pre-conceived notions, are characteristics of a mind requisite for a study of Nature's laws, and are also no less requisite for the Christian disciple; the habits of mind which are throughout the Bible represented as well-pleasing in God's sight are the very habits which are necessary for success in scientific investigation, and without which it is impossible to extend the bounds of our knowledge in that department.

There must be an honest and an eager desire after truth. An honest love of truth supplies the motive for the inquiry; an eager desire after it excites the inquirer in the pursuit. Whatever may be the result, it is so far immaterial to him. Enough that it is a fact which he arrives at, or a law which binds together many facts; that the cause is a *vera causa*, and then he cares not for the consequences: a true principle, or a true law, does not in the exact and the material sciences lead to false results. Now this love of truth is a characteristic of modern science, and one which it is necessary more particularly to specify, because inquiries, scientific and other, have not always been conducted in this spirit. Inquirers do not search to support a theory, or to carry out an idea, which their imagination has framed; the object is to arrive at the truth, to know the truth, and not to theorise. However in past times men may have speculated on such subjects for the sake of amusement, or as an exercise of ingenuity, or to indulge their fancy, or to display the powers of their intellect, or to form a school of followers, although they may have interrogated nature only so far, or so imperfectly, that it may seem to square with their notions, such is not the fact now; and however strange it may seem that any theory concerning nature should have been entertained, except when founded on observation or experiment, yet we must remember that it has been only within the last three centuries that the correct method of inquiry has been found in the world, and has been applied to the unravelling of the complicated facts of nature. Surely the open honest avowal of the natural philosopher, that he seeks after the truth and nothing but the truth; that he has no intellect or fancy to gratify, no theory to complete, no doctrine of a favourite master to fill in, is a phase required in the investigation of Nature and her laws, and is remarkably in accordance with the moral character of the disciple of Him by Whom came *truth* as well as *grace*.

And besides this earnestness and seriousness, this eagerness in the pursuit of truth, other dispositions are necessary, and which are as bright ornaments of the Christian character as

of the philosophical temper. Modesty, humility, patience, caution, industry, these obtain triumphs which are not conceded to the opposites. Rashness of assertion, arrogance and overweening confidence in our own powers, hastiness in drawing conclusions, and in inferring beyond that which the premises warrant, are inconsistent with the homage which Nature exacts of those who would unravel her secret wonders. Her mysteries are not revealed to those who come to her in any other garb than the humble and reverential spirit of learners and disciples; and who acknowledge themselves, and truly too, to be only learners and disciples at last. Proud and overbearing conceit, Nature refuses to submit to, or to lay herself open to. Whosoever will be a successful learner of the knowledge which she has to impart, must come to her in childlike simplicity, in a lowly and a teachable spirit; and then he will learn such wisdom as she has to give.

Here, too, I may observe upon the training of the character, whether moral or intellectual, which such an investigation affords. The discipline is long and tedious, by which the man is taught to subdue those baser principles which impede its philosophical temper; but one by one are they to be overcome; and even those nobler faculties and feelings, which are good in themselves, and yet prejudicial when in excess, are to be moderated. Here much diligent watchfulness is required; calmness, and caution, and dispassionate judgment are necessary, and are inculcated; impatience, impetuosity, anger or even peevishness at failure, are positively fatal to success in philosophical inquiry. Fairness in forming an estimate, patience in waiting for future light, a willingness to be ignorant for a time, a consciousness that only a little of the vast Cosmos can be known, are marks of a temper necessary for the investigation of nature's laws and works, and are closely akin to the Christian character as drawn in the Bible, and are those which the Christian perfection requires *."

APPENDIX F.

Certain Benevolent and Educational Institutions in the City of Oxford.

With the intention of putting before the philanthropists of the district a general view of the benevolent Institutions of Oxford, the following list is appended. There are various foundation charities of which the list may be seen in the Reports of the Charities' Commission for Oxford: and probably all the Parochial Societies are not entered. I shall feel grateful to any person who can forward to me the name, address, objects, and Reports of any that are omitted.

1. *Hospitals and other Medical Institutions.*

The Radcliffe Infirmary—connected with the Margate Sea-bathing Infirmary and the Leamington Hospital, and also a small Samaritan Fund.

Oxford Medical Dispensary.

St. Clement's Medical Dispensary—connected with Boulter's Almshouses.

Oxford Lying-in Charity.

County (and Borough) Lunatic Asylum.

Warneford Lunatic Asylum.

Female Penitentiary.

Public Baths and Washhouses.

* Sermon preached before the University of Oxford, by the Rev. B. Price, F. R. S. Sedleian Professor of Natural Philosophy in Oxford.

2. *Charities for relieving the distressed.*

Benevolent Society.
Clothing Fund.
Coal Fund.
Soup and Coke Fund.
District Visiting Society.
Dorcas Society—for supplying articles of dress to the poor.
Society for the relief of distressed travellers.
Loan Society—for advancing small loans to deserving poor.
Headington Union Workhouse—for part of Oxford.
House of Industry—for the eleven United Parishes of Oxford.

3. *Almshouses.*

Christ Church Almshouses.
St. Bartholomew's Almshouses, connected with Oriel College.
Boulter's Almshouses.
Ald. Parsons' Almshouses.
Ald. Tawney's Almshouses.
Stone's Hospital—Almshouses for women.

4. *Provident and Friendly Societies.*

Savings Bank.
College Servants' Benefit Society.
College Servants' Provident Institution.
Independent Order of Odd Fellows.
Mechanical Benefit Society.
Oxford Independt. order of United Brothers.
Oxford Friendly Institution.
Young Freemen's Friendly Society.
Freemason's Lodge.
Society of Ancient Druids.

5. *Schools supported by Endowment or Contributions.*

1. Connected with the University.

Christ Church School for Choristers, &c.
Magdalen College School for Choristers, &c.
New College School for Choristers.
National School, including the Grey Coat Boys' School, Jericho.

2. City and Parochial.

Blue Coat Boys, Church Street, St. Ebbe's.
Blue Gown Girls, Beef Lane.
Nixon's Freemen's School, Town Hall Yard.
St. Clement's Parochial School.
St. Ebbe's ditto.
St. Giles' ditto.
St. Aldate's ditto.
St. Mary Magdalen ditto, and Infant ditto.
St. Michael's Parochial School.
St. Peter le Bailey ditto.
St. Peter in the East ditto.
Holywell ditto.
St. Paul's ditto.
Industrial School for training Servant Girls, St. John Street.
Wesleyan School, Broken Hayes.
Baptist School for Girls, Penson's Gardens.
Industrial School for the United Parishes.

6. *Religious Societies.*

Society for Promoting Christianity among the Jews. (Auxiliary.)
British and Foreign Bible Society. (Auxiliary.)
Church Missionary Association.
Society for Promoting Christian Knowledge.
Society for the Propagation of the Gospel.
Prayer Book and Homily Society. (Auxiliary.)
Diocesan Church Building Society.
Diocesan Curates' Aid Society.

In Plate 3, third line from the bottom, for "did spread," read "did not spread."

7. *Institutions in Aid of Education.*

Choral Society, and other Musical Societies.
City Public Lectures.
City Public Reading Room and Library.
Diocesan Board of Education.
Working Men's Educational Institution.
Reading and Lecture Room, and Mess Rooms for Workmen of the New Museum.
Oxford Young Men's Christian Association.

APPENDIX G.

Any reader who may happen to wish for the titles of a few works on subjects touched on in the foregoing pages, may consult the following:—

Du Système Sociale, &c., by Ad. Quételet. Guillaumin, Paris.
The Claims of Labour. Parker, London.
Sanitary condition of the City of London, by J. Simon, F.R.S., Parker, London.
Traité d'Hygiéne Publique et privée, by Lévy. Bailliére, Paris.
Reports on Epidemic Cholera, of the College of Physicians, &c. Churchill, Lond.
General Board of Health, Report of the Committee for Scientific Inquiries, &c. 1854.
Appendix to ditto.
Reports on Drainage, &c. by the General Board of Health. (Apply to Ch. Knight, London.)
Health of Towns Commissioner's Reports.
Third Annual Report of the Commissioners for Relief of the Poor in Ireland.
Parliamentary Report (5th July, 1854) on Medical Relief.
Census of Great Britain for 1851.
Registrar General's Report on Cholera of 1849.
Twelfth Annual Report of Registrar General.
The Charities of London. Sampson Low, London.
Arnott on the Smokeless Fire-place, &c. Longman, London.
Journals of the Royal Agricultural Society of England.

In the above works references will be found to almost every branch of the inquiry touched upon in this Memoir.

ERRATA.

Page 28, at the bottom of the Table, for 'from Choleraic Disease,' read '*of* Choleraic Disease.'
34, after 'Census Classification,' read 'of 1851.'
40, line 12, for 'Plate 4,' read 'Plate 3.'
71, line 11, for 'that otherwise would have done perfectly well,' read 'might have done perfectly well.'
72, line 6, for 'the disease was arrested,' read 'was apparently arrested.'
73, conclusions, for 'coexists with Cholera,' read 'coexists with a Cholera Epidemic.'
74, line 3, for 'that the true Cholera' read 'that an Epidemic of the true Cholera.'
109, for 'Appendix B,' read 'Appendix C.'
111, last line, for 'Appendix C,' read 'Appendix B.'
Plate 3, *Brackley* was inserted only to show its position. Cholera occurred there; but its history has not been investigated by me: there is very little communication between Brackley and Oxford.

Also by the same Author,

SYNOPSIS OF THE PHYSIOLOGICAL SERIES IN THE CH. CH. MUSEUM: Arranged, for the use of Students, after the Plan of the Hunterian Collection, and chiefly under the Divisions of the Hunterian Catalogue.

A LETTER FROM A MEDICAL STUDENT ON SOME MORAL DIFFICULTIES IN HIS STUDIES, AND ON THE DUTY OF THE STATE TO AID IN LESSENING THEM.

REMARKS ON THE EXTENSION OF EDUCATION AT THE UNIVERSITY OF OXFORD.

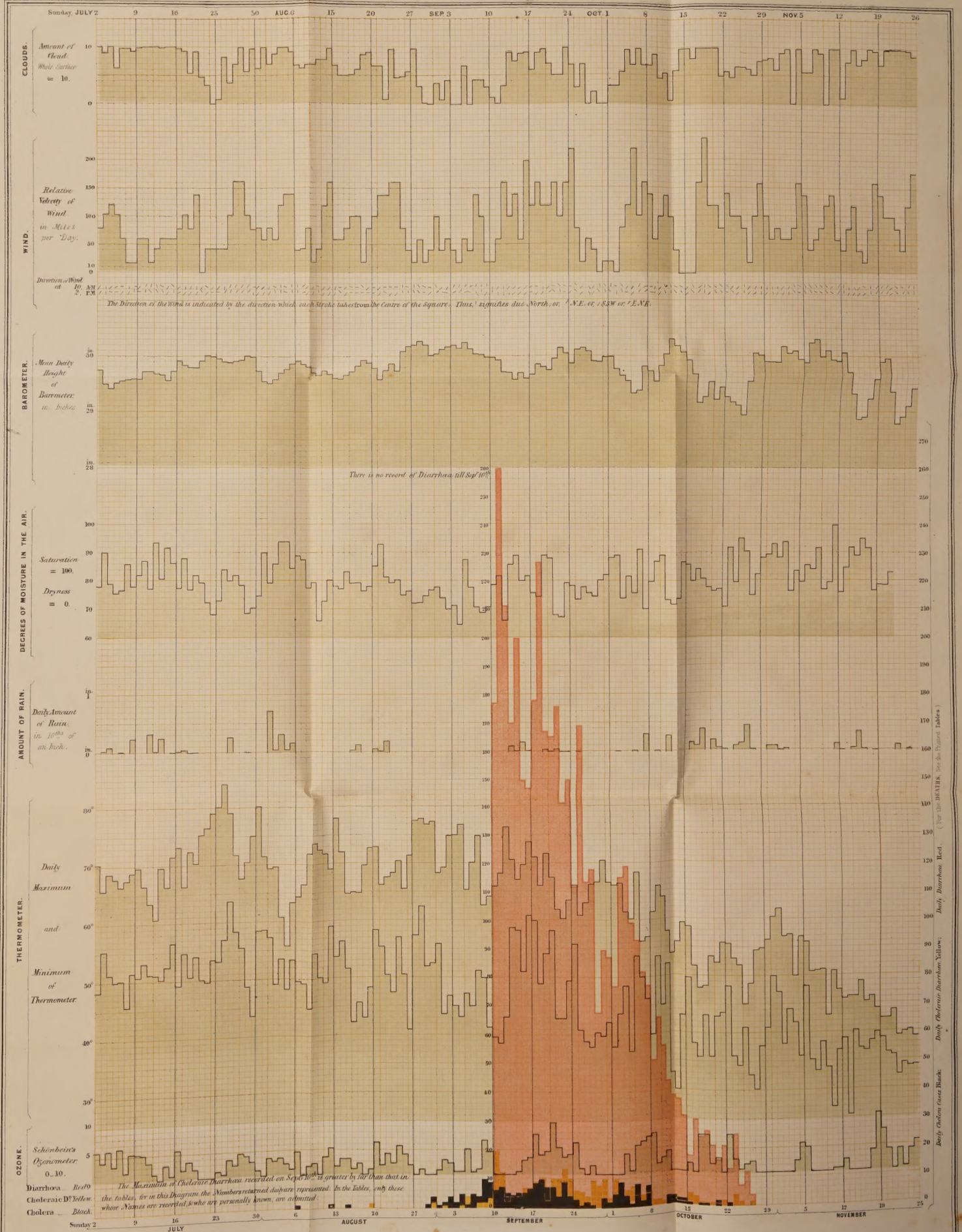
A LETTER TO THE RIGHT HONOURABLE W. E. GLADSTONE, M. P., ON THE FORMATION OF THE INITIATIVE BOARD IN THE UNIVERSITY OF OXFORD.

A few Copies may be had of

THE PLAINS OF TROY,

Illustrated by a Panoramic Drawing taken on the spot; and a Map constructed after the latest Survey. Oxford, 1839.

WELLCOME LIBRARY INSTITUTE


Sunday JULY 2 9 16 23 30 AUG.6 15 20 27 SEP. 3 10 17 24 OCT. 1 8 15 22 29 NOV. 5 12 19 26
CLOUDS.
Amount of Cloud. Whole Surface = 10.
WIND.
Relative Velocity of Wind in Miles per Day.
Direction of Wind at 10 A.M. 2 P.M.
The Direction of the Wind is indicated by the direction which each Stroke takes from the Centre of the Square. Thus, ' signifies due North, or ' N.E. or ' S.S.W. or ' E.N.E.
BAROMETER.
Mean Daily Height of Barometer in Inches.
There is no record of Diarrhœa till Sep.r 10th.
DEGREES OF MOISTURE IN THE AIR.
Saturation = 100. Dryness = 0.
AMOUNT OF RAIN.
Daily Amount of Rain in 10ths of an Inch.
THERMOMETER.
Daily Maximum and Minimum of Thermometer.
OZONE.
Schönbein's Ozonometer. 0–10.
Diarrhœa Red
Choleraic Dy Yellow
Cholera Black.
Daily Diarrhœa Red. (For the DEATHS, See the Printed Tables.)
Daily Choleraic Diarrhœa Yellow.
Daily Cholera cases Black.
The Maximum of Choleraic Diarrhœa recorded on Sept 10th is greater by far than that in the tables, for in this Diagram the Numbers returned daily are represented. In the Tables, only those whose Names are recorded, & who are personally known, are admitted.
Sunday 2 9 16 23 30 6 13 20 27 3 10 17 24 1 8 15 22 29 5 12 19 25
JULY AUGUST SEPTEMBER OCTOBER NOVEMBER

DIAGRAM—SHEWING THE DAILY NUMBER OF NEW CASES OF CHOLERA, CHOLERAIC DIARRHŒA, AND DIARRHŒA, REPORTED IN OXFORD, DURING THE EPIDEMIC OF 1854, TOGETHER WITH THE DAILY MAXIMUM AND MINIMUM OF TEMPERATURE OF THE AIR, THE AMOUNT OF RAIN, DEGREE OF MOISTURE IN THE AIR, THE MEAN HEIGHT OF THE BAROMETER, THE FORCE AND DIRECTION OF THE WIND AT 10 A.M. AND 2 P.M. AND THE AMOUNT OF CLOUD.

The Meteorological Data furnished by MANUEL JOHNSON ESQ. *Radcliffe Observer &c.*

To Illustrate Dr Acland's Report on Cholera at Oxford, 1854.

Note. The Cases reported under treatment more or course double or treble or more.

Lith. Waterlow & Sons, London